NP6045

SERVICE MANUAL

REVISION 1

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SERVICE INFORMATION

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全機種

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LOCATION
SUBJECT

Service Manual in New Format

This Service Manual is compiled in a new format, which differs from the past format in respect of chapter organization.
As can be learned from the following comparison, chapters 3 and 4 of the old format are divided into several chapters (Chapters 2 through 7) for more detailed descriptions.
We hope that the new format will provide you with a better understanding of the machines for servicing work.

[Old]
Chapter 1 General Introduction
Chapter 2 Coping Processes
Chapter 3 Operations and Timing
Chapter 4 Mechanical System
Chapter 5 Installation
Chapter 6 Maintenance and Inspection
Appendix

⇨

[New]
Chapter 1 General Description
Chapter 2 Basic Operation
Chapter 3 Exposure System
Chapter 4 Image Formation System
Chapter 5 Pick-Up/Feeding System
Chapter 6 Fixing System
Chapter 7 Externals/Auxiliary Mechanisms
Chapter 8 Installation
Chapter 9 Maintenance and Servicing
Chapter 10 Troubleshooting
Appendix

新サービスマニュアルの紹介

このサービスマニュアルは、従来のサービスマニュアルの章構成を改善した新形態のサービスマニュアルとして作成しております。
新しいサービスマニュアルは、以下の章構成になっており、従来のサービスマニュアルの第3章と第4章を詳細な区分に分割（第2章～第7章）し、記載しております。新しいサービスマニュアルを従来のサービスマニュアルと同様に機械を正しく・深く理解するためにご活用下さい。

[旧]
第１章 入 門
第２章 複写プロセス
第３章 動作概略
第４章 機械系統
第５章 設 置
第６章 保守・点検
第７章 画像／作動不良対策
付 録

⇨

[新]
第１章 入 門
第２章 基本動作概略
第３章 露光系統
第４章 作像系統
第５章 給紙／搬送系統
第６章 定着系統
第７章 外装／補助制御系統
第８章 設 置
第９章 保守・点検
第１０章 画像／作動不良対策
付 録

Printed in Japan
Imprimé au Japon

INTRODUCTION

This Service Manual provides basic facts and figures needed to service the plain paper copier NP6045 in the field. The NP6045 is designed to enable automated copying work and may be configured with the following system components:

1. Stapler Sorter-E2, Stapler Sorter-G1, Sorter-E1, Sorter-G1
2. RDF-H1

For descriptions on the system components, see their respective service manuals.

This Service Manual covers the copier only, and consists of the following chapters:

Chapter 1	*General Description* introduces the copier's features and specifications, shows how to operate the copier, and explains how copies are made.
Chapter 2	*Basic Operation* provides outlines of the copier's various operational workings.
Chapter 3	*Exposure System* discusses the principles of operation used for the copier's lens drive unit and scanner drive unit. It also explains the timing at which these drive units are operated, and shows how they may be disassembled/assembled and adjusted.
Chapter 4	*Image Formation System* discusses the principles of how images are formed. It also explains the timing at which the various units involved in image formation are operated, and shows how they may be disassembled/assembled and adjusted.
Chapter 5	*Pick-Up/Feeding System* explains the principles used from when copy paper is picked up to when a copy is delivered in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.
Chapter 6	*Fixing System* explains the principles used to fuse toner images to transfer media in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.
Chapter 7	*Externals/Auxiliary Mechanisms* shows the copier's external parts, and explains the principles used for the copier's various control mechanisms in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.
Chapter 8	*Installation* introduces requirements for the site of installation, and shows how the copier may be installed using step-by-step instructions.
Chapter 9	*Maintenance and Servicing* provides tables of periodically replaced parts and consumables/durables and scheduled servicing charts.
Chapter 10	*Troubleshooting* provides tables of maintenance/inspection, standards/adjustments, and problem identification (image fault/malfunction).

Appendix contains a general timing chart and general circuit diagrams.

The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.

   In the diagrams, ▬▭▬▭▬ represents the path of mechanical drive—where a signal name accompanies the symbol ──────► , the arrow indicates the direction of the electric signal.

   The expression "turn on the power" means flipping on the power switch, closing the front door, and closing the delivery unit door, which results in supplying the machine with power.

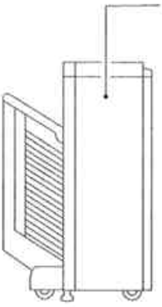
2. In the digital circuits, '1' is used to indicate that the voltage level of a given signal is "High," while '0' is used to indicate "Low." (The voltage value, however, differs from circuit to circuit.)

   In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

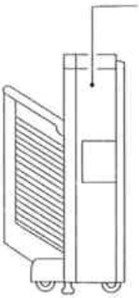
The descriptions in this Service Manual are subject to change without notice for product improvement or other reasons, and major changes will be communicated in the form of *Service Information* bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant *Service Information* bulletins and be able to identify and isolate faults in the machine.

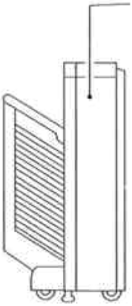
System Configuration



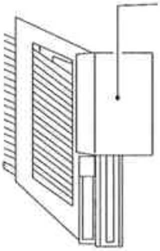
Stapler Sorter-E2
In addition to the functions of a 20-bin sorter, automatically staples sorted copies. Further, it swings out copies to the front for removal, and is equipped with a multiple stacking function, in which two or more sets of copies may be delivered to a single bin.



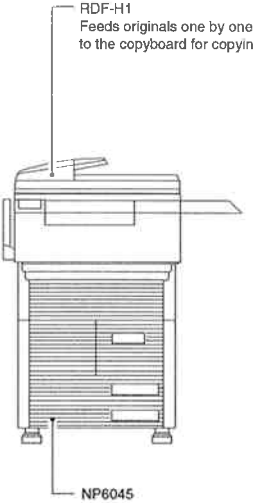
Stapler Sorter-G1
In addition to the functions of a 20-bin sorter, automatically staples sorted copies.



Sorter-G1
Is a 20-bin sorter capable of automatic sorting and grouping.



Sorter-E1
Is a 20-bin sorter capable of automatic sorting and grouping.



RDF-H1
Feeds originals one by one from a stack to the copyboard for copying.

NP6045

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CHAPTER 1

GENERAL DESCRIPTION

This chapter introduces the copier's features and specifications, shows how to operate the copier, and explains how copies are made.

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I. FEATURES

1. The NP6045 is capable of making as many as 45 copies (A4, horizontal) every minute.
2. It uses newly designed pick-up and feeding mechanisms so that it not only helps save space, but it also is less susceptible to jams.
3. It provides high durability and high image quality required of high-speed copying. The use of the Canon-unique A-Si (amorphous silicon) photosensitive drum ensures high durability while the single-component toner projection mechanism promises high-quality images for a long time.
4. It is equipped with a large-size liquid crystal display, offering easy-to-understand instructions.

II. SPECIFICATIONS

1. Type

Body	Console
Copyboard	Fixed
Light source	Halogen lamp (70 V, 265 W)
Lens	Zoom lens
Photosensitive medium	Amorphous silicon (ø80)

2. System

Body		Front deck paper deck type
Copying		Indirect electrostatographic
Charging		Corona
Exposure		Slit (moving light source)
Copy density adjustment		Automatic or manual
Development		Dry (toner projection)
Pick-up	Automatic	2 front cassettes 1 front paper deck
	Manual	Multifeeder (5.5 mm deep; 50 sheets of 80 g/m^2 paper)
Transfer		Corona
Separation		Corona (static separation)
Cleaning		Blade
Fixing		Heating roller (790 W + 410 W; 120 V), (1200 W; 220/240 V)

3. Performance

Original type		Sheet, book, 3-D object (2 kg max.)
Maximum original size		A3/11" × 17"
Copying ratios	Direct	1:1
	Reduce I	1:0.500
	Reduce II	1:0.707
	Reduce III	1:0.816
	Reduce IV	1:0.865
	Enlarge I	1:2.000
	Enlarge II	1:1.414
	Enlarge III	1:1.224
	Enlarge IV	1:1.154
	Zoom	1:0.490 to 2.040 (1% increments)
Wait time		5 min or less (at 20°C room temperature)
First copy		3.0 sec (A4, non-AE, top cassette/paper deck)
Continuous copying		999 copies max.
Copy size		One-sided Metric A3 max. A6 (vertical, postcard) min. Inch 11" × 17" max. STMT min. Two-sided Metric A3 max. A5 (horizontal) min. Inch 11" × 17" max. STMT (horizontal) min.

Copy paper type	Cassette		• Plain Paper (64 to 90 g/m^2) A3, B4, A4, B5, A4R, B5R, 11" × 17", LGL, LTR, LTR-R, A5, A5R, STMT, STMTR, Foolscap, GLTR, GLTR-R, KLGL, K-LGL-R, OFFICIO, E-OFFICIO, A-OFFICIO, B-OFFICIO, A-LTR, ALTR-R, A-LGL • Tracing Paper* (SM-1) A3, B4, A4, B5, A4R, B5R • Colored Paper (Canon-recommended) B4, A4
	Paper deck		• Plain Paper (64 to 90 g/m^2) A4, B5, LTR • Colored Paper (Canon-recommended) A4
	Automatic		• Plain Paper (64 to 90 g/m^2) A3, B4, A4, B5, A4, B5R, 11" × 17", LGL, LTR, LTR-R, STMT-R*, postcard • Tracing Paper (SM-1)* A3, B4, A4, B5, A4R, B5R • Transparency* (Canon-recommended) A4, LTR • Colored Paper* (Canon-recommended) B4, A4 • Label Sheet (Canon-recommended) A4, LTR • Thick Paper* (91 to 200 g/m^2)
	Two-sided copying	Automatic	• Plain Paper* (64 to 90 g/m^2) A3, B4, A4, B5, A4R, B5R, 11" × 17", LGL, LTR, LTR-R, A5, STMT • Colored Paper (Canon-recommended) B4, A4
		Multifeeder	• Plain Paper* (64 to 90 g/m^2) A3, B4, A4, B5, A4R, B5R, 11" × 17", LGL, LTR, LTR-R, STMT-R, A5, STMT • Colored Paper* (Canon-recommended) B4, A4
	Overlay copying	Automatic	• Plain Paper* (64 to 90 g/m^2) A3, B4, A4, B5, A4R, B5R, 11" × 17", LGL, LTR, LTR-R, A5, STMT • Colored Paper* (Canon-recommended) B4, A4
		Multifeeder	• Plain Paper* (64 to 90 g/m^2) A3, B4, A4, B5, A4R, B5R, 11" × 17", LGL, LTR, LTR-R, STMT-R, A5, STMT • Colored Paper* (Canon-recommended) B4, A4

Tray	Claw		None
	Cassette		55 mm deep (500 sheets each of 80 g/m^2 paper)
	Paper deck		162 mm deep (about 1500 sheets each of 80 g/m^2 paper)
	Copy tray		250 sheets (approx.; A3, 80 g/m^2)
Non-image width	Leading edge		4.5±1.5 mm in Direct (4.5±1.5 mm in non-Direct, Overlay, Two-sided)
	Trailing edge		2.0 ±1.0 mm (2.0 ±1.0 mm in non-Direct, Overlay, Two-sided)
	Left/right (1st side)	A4 horizontal, B5 horizontal, B4, A3, LTR horizontal	2.75±2.5mm
	Left/right (2nd side)	A4 horizontal, B5 horizontal, B4, A3, LTR horizontal	2.75±2.5mm
Auto Clear			Provided (2 min standard; may be changed from 0 to 9 min in 1-min increments and from 0 to 50 sec in 10-sec increments)
Auto Power-Off			Provided (1 hr standard; may be changed from 0 to 2 hr; in 10-min increments up to 1st 1 hr, in 1-hr increments up to 24 hr)
Accessory			• Stapler Sorter-E2 • Stapler Sorter-G1 • CC-V • Sorter-E1 • Sorter-G1 • Cassette Heater

4. Others

		Front paper deck
Operating environment	Temperature	7.5° to 32.5°C/45.5° to 90.5°F
	Humidity	5 to 80% RH
	Atmospheric pressure	810.6hPa to 1013.3hPa (0.8 to 1.0 atm)
Power supply	120 V	NGQ XXXXX
	220/240 V(ITA)	FGB XXXXX
	220/240 V(UK)	DGB XXXXX
	220/240 V(FRN)	BGB XXXXX
	220/240 V(GER)	AGB XXXXX
	220/240 V(AMS)	UBW XXXXX, CGB XXXXX
	220/240 V(CA)	RBJ XXXXX
	220/240 V	PCL XXXXX, EGB XXXXX
Power consumption	Maximum	1.5 kW or less
	Standby	0.3 kWh or less (reference only)
	Continuous copying	1.2 kWh or less (reference only)
Noise	Copying	71 dB or less (sound power level by ISO standards)
	Standby	50 dB or less (as required)
Ozone (avr over 8 hr)		0.05 ppm or less

Dimensions	Width	620 mm/24.4 in
	Depth	725 mm/28.5 in
	Height	1136 mm/44.7 in
Weight		187 kg/412.2 lb (approx.; w/RDF)
Consumables	Copy paper	Keep wrapped to protect against moisture.
	Toner	Avoid direct sunshine, and store at 40°C, 85% or less.

Ratio		Size	Copy size	Copies/min
Direct		A3(297 × 420mm)	A3	24
		A4(210 × 297mm)	A4	45
		B4(257 × 364mm)	B4	30
		B5(182 × 257mm)	B5	45
		A4R(297 × 210mm)	A4R	35
		B5R(257 × 182mm)	B5R	39
Reduce	I (50%)	A3 → 5R	A5R	44
	II (70%)	A3 → 4R	A4R	35
		B4 → B5R	B5R	39
		A4 → A5	A5	45
	III (81%)	B4 → A4R	A4R	35
	IV (86%)	A3 → B4	B4	30
		A4 → B5	B5	45
Enlarge	I (200%)	A5R → A3	A3	23
	II (141%)	A4R → A3	A3	24
		B5R → B4	B4	29
		A5 → A4	A4	45
	III (122%)	A4R → B4	B4	30
	IV (115%)	B4 → A3	A3	24
		B5 → A4	A4	45

Table 1-201 Copying Speed (copier only)

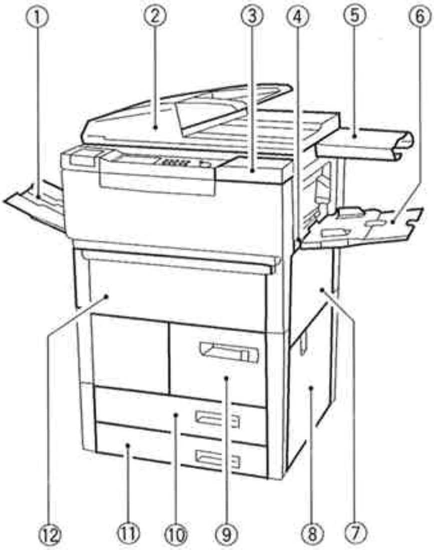
Ratio		Size	Copy paper size	Copies/min
Direct		LTR	LTR	45
		11" × 17"	11" × 17"	24
		LGL	LGL	30
		LTRR	LTRR	37
		STMT/STMTR	STMT/STMTR	45
Reduce	I (50%)	11" × 17" → STMTR	STMTR	43
	II (64.7%)	11" × 17" → LTRR	LTRR	37
	III (73.3%)	11" × 15" → LTRR	LTRR	30
	I (200%)	STMR → 11" × 17"	11" × 17"	24
Enlarge	II (129.4%)	LTRR → 11" × 17"	11" × 17"	24
	III (121.4%)	LGL → 11" × 17"	11" × 17"	24

Table 1-202 Copying Speed (copier only)

Specifications are subject to change without notice.

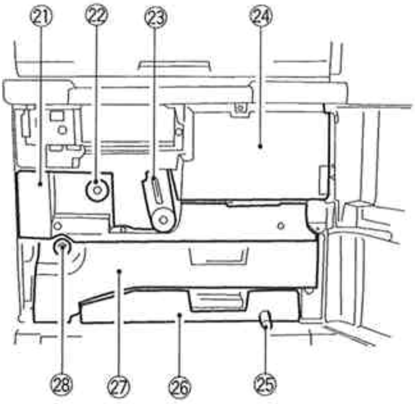
III. NAMES OF PARTS

A. External View



① Copy tray
② RDF
③ Toner supply mouth
④ Power switch
⑤ Original tray/manual holder
⑥ Multifeeder
⑦ Upper right door
⑧ Lower right door
⑨ Paper deck
⑩ Cassette 3
⑪ Cassette 4
⑫ Front door

Figure 1-301

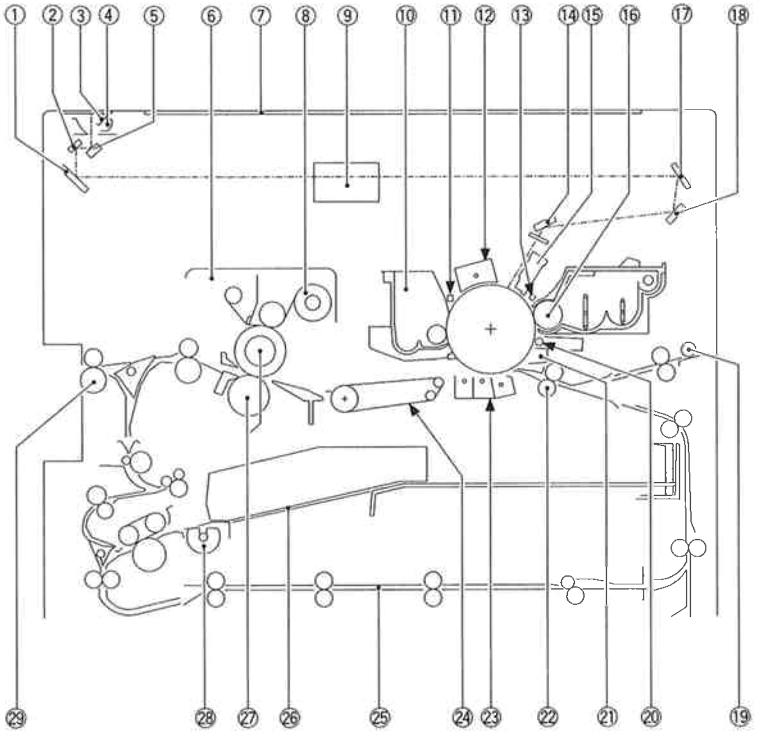


㉑ Fixing/feeding assembly
㉒ Fixing assembly knob
㉓ Fixing/feeding assembly releasing lever
㉔ Toner hopper
㉕ Holding tray feeding knob
㉖ Holding tray feeding assembly
㉗ Holding tray assembly
㉘ Holding tray knob

Figure 1-302

B. Cross Section

1. Cross Section of the Body



① No. 3 mirror
② No. 2 mirror
③ Heat absorption glass
④ Scanning lamp
⑤ No. 1 mirror
⑥ Fixing assembly
⑦ Copyboard glass
⑧ Fixing cleaner belt
⑨ Lens
⑩ Drum cleaning assembly
⑪ Pre-exposure lamp
⑫ Primary charging assembly
⑬ Potential sensor
⑭ No. 6 mirror
⑮ Blank exposure lamp
⑯ Developing cylinder
⑰ No. 4 mirror
⑱ No. 5 mirror
⑲ Multifeeder pick-up roller
⑳ Roller electrode
㉑ Pre-transfer charging assembly
㉒ Registration roller
㉓ Transfer/separation assembly
㉔ Feeding belt
㉕ Duplexing unit feeding assembly
㉖ Holding tray
㉗ Fixing roller
㉘ Holding tray pick-up (crescent) roller
㉙ Delivery roller

Figure 1-303

IV. OPERATIONS

A. Control Panel

① Touch panel display
② Guide key
③ Reset key
④ Keypad
⑤ Display Contrast key
⑥ Energy Saver key
⑦ Stop key
⑧ Toner supply mouth
⑨ Pilot lamp
⑩ Copy Start key
⑪ Clear key
⑫ Interrupt key
⑬ User Mode key
⑭ Preferences key

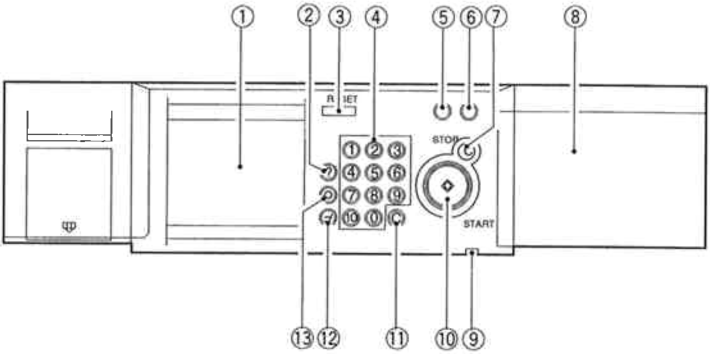

①
②
③
④
⑤
⑥
⑦
⑧
RESET
STOP
START
⑬
⑫
⑪
⑩
⑨

Figure 1-401

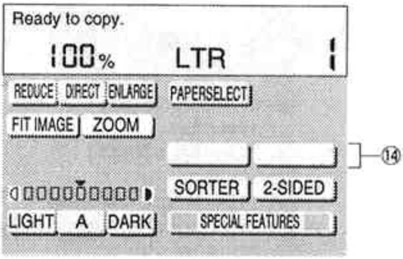

Ready to copy.
100%
LTR
1
REDUCE
DIRECT
ENLARGE
PAPERSELECT
FIT IMAGE
ZOOM
⑭
SORTER
2-SIDED
LIGHT
A
DARK
SPECIAL FEATURES

Figure 1-402

B. Special Features Mode

Mode	Description
Auto Start	Use it while the copier is in wait state so that it will start copying operation as soon as it becomes ready.
Pre-Heat	Use it to turn off all indications on the control panel including the Power indicator but excluding the Pre-Heat indicator.
Bind Margin	Use it to select right binding, left binding, top binding, or bottom binding.
Erase Frame	Use it to erase frame images of the original, sheet, holes, or book.
Two-Sided Copy	Use it to make two-sided copies of one-sided originals, two-sided copies of two-sided originals, or two-sided copies of two-sided originals.
Overlay Copy	Use it to make overlay copies.
Auto Paper Select	Use it so that the paper that is most appropriate to the original size and the copy ratio will automatically be selected.
Auto Ratio Select	Use it so that the copy ratio that is most appropriate to the original size and the copy size will automatically be selected.
Interrupt	Use it to interrupt an ongoing copying run to make copies of a different original.
Page Composition	Use it to make 2-on-1, 4-on-1, two-sided 2-on-1, or overlay 2-on-1 copies.
ID	Use it so that copying is possible only in response to an input of an ID. (As many as 300 IDs may be registered.)

Table 1-401

C. User Mode

1. Types of User Modes

The copier offers the following four user modes, in which the user may freely select specific settings.

1. Specifications
2. Adjustment/cleaning
3. Timer
4. Preferences function

1. Specifications

Item (on display)	Description	Remarks
auto sort ON/OFF	Use it to select or deselect automatic sorting when using the RDF and making copies of multiple originals (copy count 2 or higher).	At shipment: ON
sorter front collection ON/OFF	Select ON when the sorter is connected so that the sorter will move the copies to the front for collection. Select OFF when the sorter is not connected so that the sorter will not move the copies to the front for collection (no command will be issued).	At shipment: ON Copy paper: A4, B5, LTR horizontal
skip mode ON/OFF	Use it so that a distinguishing mark (holes for example) on odd pages will not appear on the right of even pages or vice versa. ON: Enables skip copying. OFF: Disables skip copying.	At shipment: ON
feeder manual auto start ON/OFF	Use it to specify whether copying should start as soon as an original is pulled in manual mode using the RDF or whether copying should start in response to the Copy Start key, thereby allowing selection of copying mode. ON: Enables auto start copying. OFF: Disables auto start copying.	Factory setting: ON
auto cassette change/APS ON/OFF	Use it to specify whether copying should continue by automatically switching to a different cassette if the selected cassette runs out of copy paper in continuous copying mode. ON: Enables auto cassette change/APS. OFF: Disables auto cassette change/APS.	Factory setting: ON
manual size specification ON/OFF	Use it to specify whether the Multifeeder Size Input screen should be displayed when the multifeeder is selected. ON: Display the screen. OFF: Do not display the screen.	Factory setting: OFF

Table 1-402(a)

Item (on display)	Description	Remarks
inch input ON/OFF	Use it to specify whether inch input should be enabled when in hole image erasing or zoom program size specification mode. ON: Enables inch input. OFF: Disables inch input.	Factory setting: OFF Ref.: ON if US model
copy wait time display ON/OFF	Use it to specify whether the copy time should be displayed during copying. ON: Display. ON: Do not display.	Factory setting: OFF
buzzer ON/OFF	Use it to specify whether the buzzer should be sounded in response to inputs, warnings, standby, and copying end. ON: Enables the buzzer. OFF: Disables the buzzer.	Factory setting: ON
size fine-tune ratio	Use it to specify the ratio to be used for size fine-tuning between 90% and 99% in 1% increments.	Factory setting: 93%
size fine-tuning centering ON/OFF	Use it to specify centering for size fine-tuning. ON: Enables centering. OFF: Disables centering.	Factory setting: ON
size fine-tuning non-image ON/OFF	Use it to specify whether a non-image width should be created for size fine-tuning. ON: Create non-image width. OFF: Do not create non-image width.	Factory setting: OFF
pre-heat mode change	Use it to enable/disable lowering of power consumption for the copier in pre-heat mode and by what %. 10%: saving of 10% 25%: saving of 25% 50%: saving of 50% None: no saving (saving of 0%)	Saving: Rate of saving in relation to the total copier power consumption. Factory setting: None
specifications initialization	Use it to decide whether to initialize or not initialize specifications in user mode.	
standard mode change	Use it to store the mode to be selected in response to a press on the Reset key (or when auto clear is activated). The user may choose factory setting as part of initializing standard mode.	Factory mode Ratio: 100% Paper: Auto selection Density: Manual Copy count: 1

Table 1-402(b)

2. Adjustment/Cleaning

Item (on display)	Description	Remarks
wire cleaning	Use it so that the primary charging wire, pre-transfer charging wire, and transfer/separation charging wire may be cleaned automatically.	
feeder cleaning	Place ten sheets of blank paper on the feeder tray, and press the OK key. The blank sheets will be fed in 'one-sided to one-sided' copying mode, thereby cleaning the separation belt and feeding roller.	
zoom fine adjustment	Use it to fine-adjust the vertical and horizontal reproduction ratios in 0.2% increments. Width: -1.0% to +1.0% Unit: 0.2%	

Table 1-403

3. Timer

Item (on display)	Description	Remarks
auto clear time	Use it to set the auto clear time between 1 and 9 min in 1-min increments or between 0 and 50 sec in 10-sec increments. You may disable the auto clear mechanism by setting it to 0 sec.	Factory setting: 2 min
auto power-off time	Use it to set the auto power-off time between 10 min and 2 hr in 10-min increments (up to 24st hr) and in 1-hr increments (from 1st to 2nd hr). You may disable the auto power-off mechanism.	Factory setting: 1 hr
weakly timer	Set it to 'none' for the time of the day of the week (Mon. through Sun.) if you do not want the copier to turn off. (Make sure that the current date and time are correct to ensure that the copier turns off as set.)	
time/day	Use it to set the built-in clock, thereby setting the time and the day of the week.	The control panel will not display the time or the day of the week; set it for the weekly timer.

Table 1-404

4. Preferences

Item (on display)	Description	Remarks
user customized key	Use it to set mode setting keys of preferences on the standard screen.	Maximum: 2 keys

Table 1-405

V. ROUTINE WORK BY THE USER

Instruct the user to clean the following once a week without fail.

1) Copyboard Glass
   Wipe it with a moist cloth, and dry wipe it.
2) RDF Feeding Belt
   Wipe it with a cloth moistened with a solution of mild detergent, and dry wipe it.

VI. IMAGE FORMATION

A. Outline

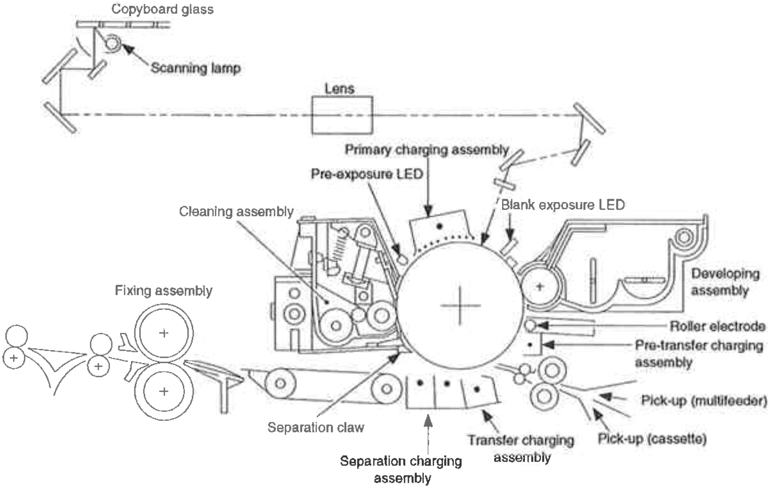

Copyboard glass
Scanning lamp
Lens
Primary charging assembly
Pre-exposure LED
Blank exposure LED
Cleaning assembly
Fixing assembly
Developing assembly
Roller electrode
Pre-transfer charging assembly
Pick-up (multifeeder)
Pick-up (cassette)
Separation claw
Transfer charging assembly
Separation charging assembly

Figure 1-701

The copier uses an electrostatographic method to produce images and is constructed as shown in Figure 1-701.

It is equipped with an automatic control mechanism to ensure stable reproduction of high-quality images.

Figure 1-702 gives an outline of the steps taken to produce copies. (The automatic control mechanism will be described later.)

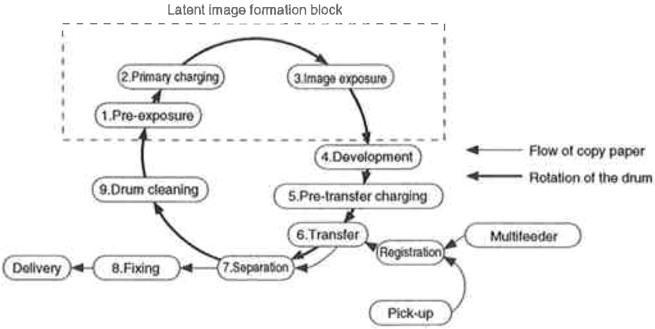

Latent image formation block
2.Primary charging
3.Image exposure
1.Pre-exposure
4.Development
9.Drum cleaning
5.Pre-transfer charging
6.Transfer
Registration
Multifeeder
Delivery
8.Fixing
7.Separation
Pick-up
Flow of copy paper
Rotation of the drum

Figure 1-702

CHAPTER 2

BASIC OPERATION

This chapter provides outlines of the copier's various operational workings. (Note that a single rotation of the drum takes about 0.79 sec.)

I. BASIC OPERATIONS 2-1
- A. Functional Construction.................2-1
- B. Outline of the Electric Circuitry......2-2
- C. Basic Sequence of Operations......2-4
- D. Main Motor (M1) Control Circuit....2-11
- E. Inputs to the DC Controller............2-13
- F. Outputs from the DC Controller 2-21
- G. Inputs to and Outputs from the Options 2-33

I. BASIC OPERATIONS

A. Functional Construction

The copier can be roughly divided into four functional blocks: namely, pick-up/feeding system, exposure system, image formation system, and control system.

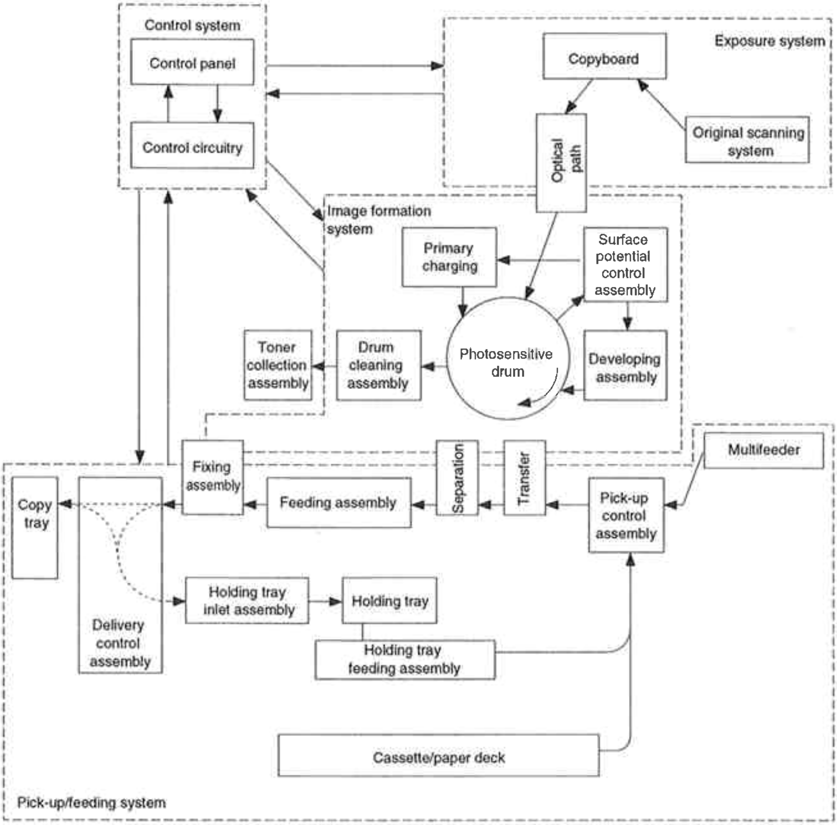

Control system
Control panel
Control circuitry
Exposure system
Copyboard
Original scanning system
Optical path
Image formation system
Primary charging
Surface potential control assembly
Photosensitive drum
Developing assembly
Drum cleaning assembly
Toner collection assembly
Fixing assembly
Separation
Transfer
Multifeeder
Pick-up control assembly
Feeding assembly
Copy tray
Delivery control assembly
Holding tray inlet assembly
Holding tray
Holding tray feeding assembly
Cassette/paper deck
Pick-up/feeding system

Figure 2-101

B. Outline of the Electric Circuitry

The copier's major electrical mechanisms are controlled by the microprocessor on the DC controller PCB.

- Copy sequence
- High-voltage
- Fixing temperature
- Scanner drive
- Pick-up/feeding
- Lens motor (X, Y)
- Blank exposure LEDs
- Analog signal input
  Thermistor signal
  Potential sensor signal
  Room temperature signal
  Manual size signal

The control panel is equipped with its own CPU (Q937) which controls its keys, LEDs, and LCD.

The communication with the RDF and the sorter is between the communications IC (IC) on the controller PCB of the option and the communication IC on the copier's DC controller PCB. (IPC communication 2)

See Figure 2-102 for a block diagram of the relationships between the major circuits of the copier.

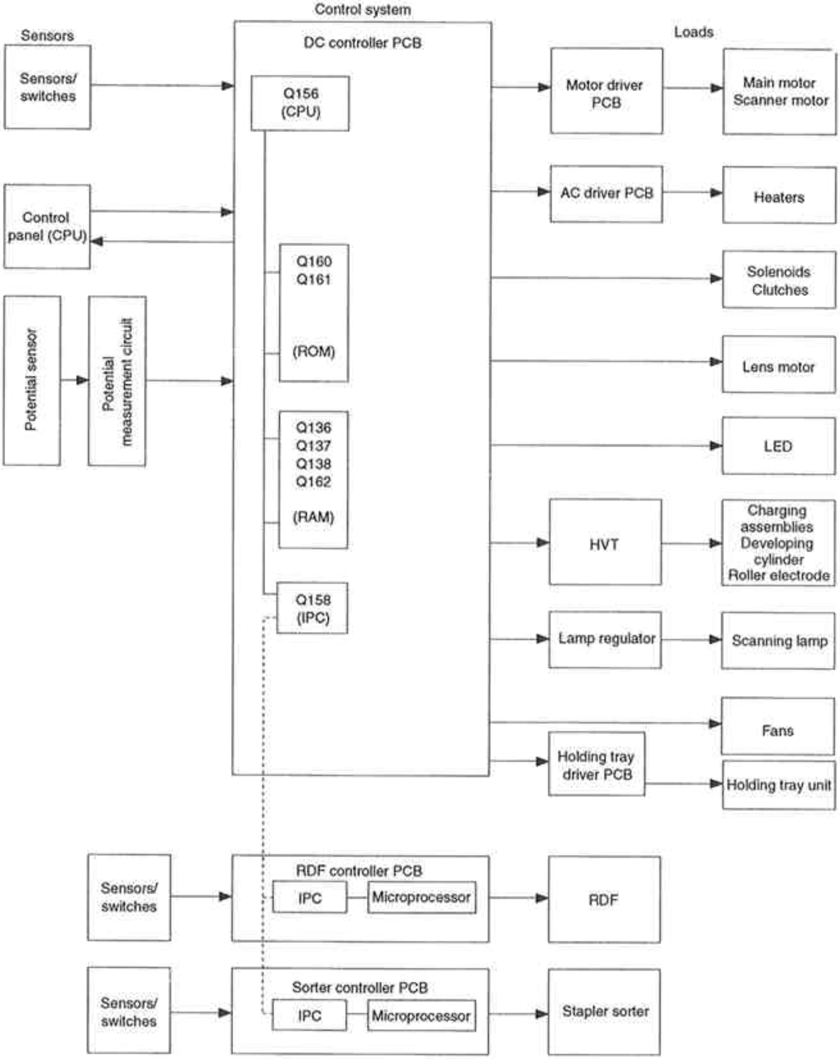
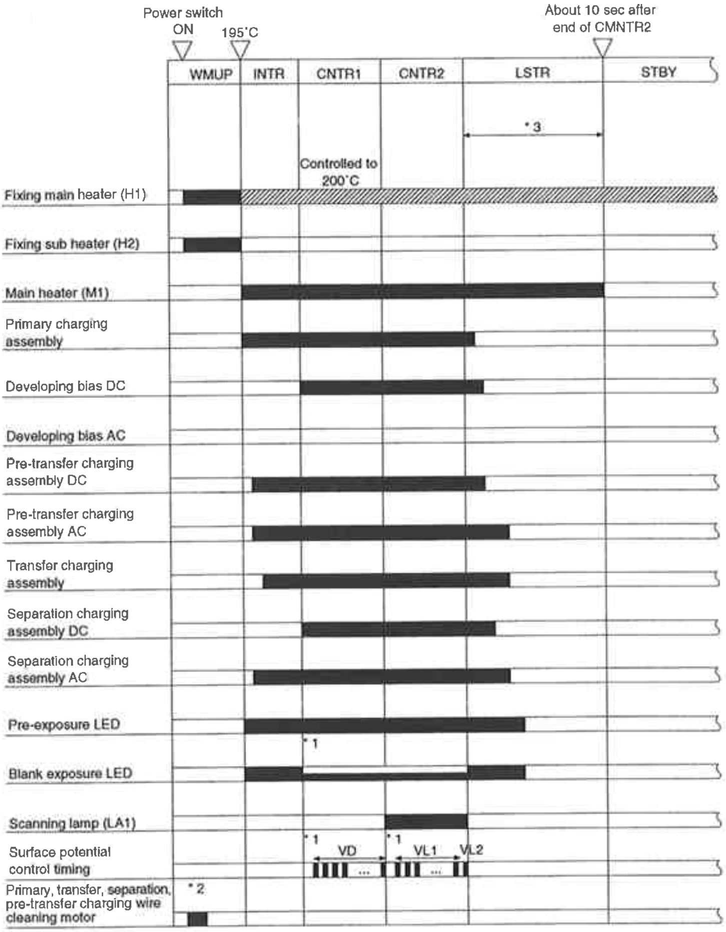

Control system
DC controller PCB
Sensors
Sensors/ switches
Q156 (CPU)
Control panel (CPU)
Potential sensor
Potential measurement circuit
Q160
Q161
(ROM)
Q136
Q137
Q138
Q162
(RAM)
Q158 (IPC)
Loads
Motor driver PCB
Main motor
Scanner motor
AC driver PCB
Heaters
Solenoids
Clutches
Lens motor
LED
HVT
Charging assemblies
Developing cylinder
Roller electrode
Lamp regulator
Scanning lamp
Fans
Holding tray driver PCB
Holding tray unit
Sensors/ switches
RDF controller PCB
IPC
Microprocessor
RDF
Sensors/ switches
Sorter controller PCB
IPC
Microprocessor
Stapler sorter

Figure 2-102

C. Basic Sequence of Operations

1. Basic Sequence of Operations at Power-On (1/2)

The following sequence applies when the surface temperature of the fixing roller is 75°C at power-on and, in addition, the ambient temperature is 17°C or more.


Power switch ON
195°C
About 10 sec after end of CMNTR2
WMUP
INTR
CNTR1
CNTR2
LSTR
STBY
*3
Controlled to 200°C
Fixing main heater (H1)
Fixing sub heater (H2)
Main heater (M1)
Primary charging assembly
Developing bias DC
Developing bias AC
Pre-transfer charging assembly DC
Pre-transfer charging assembly AC
Transfer charging assembly
Separation charging assembly DC
Separation charging assembly AC
Pre-exposure LED
*1
Blank exposure LED
Scanning lamp (LA1)
*1
*1
VD
VL1
VL2
Surface potential control timing
Primary, transfer, separation, pre-transfer charging wire cleaning motor
*2

*1. During potential control (CNTR1, CNTR2), blank exposure lamp LEDs corresponding to the potential sensor are turned OFF to measure VD and VL1.

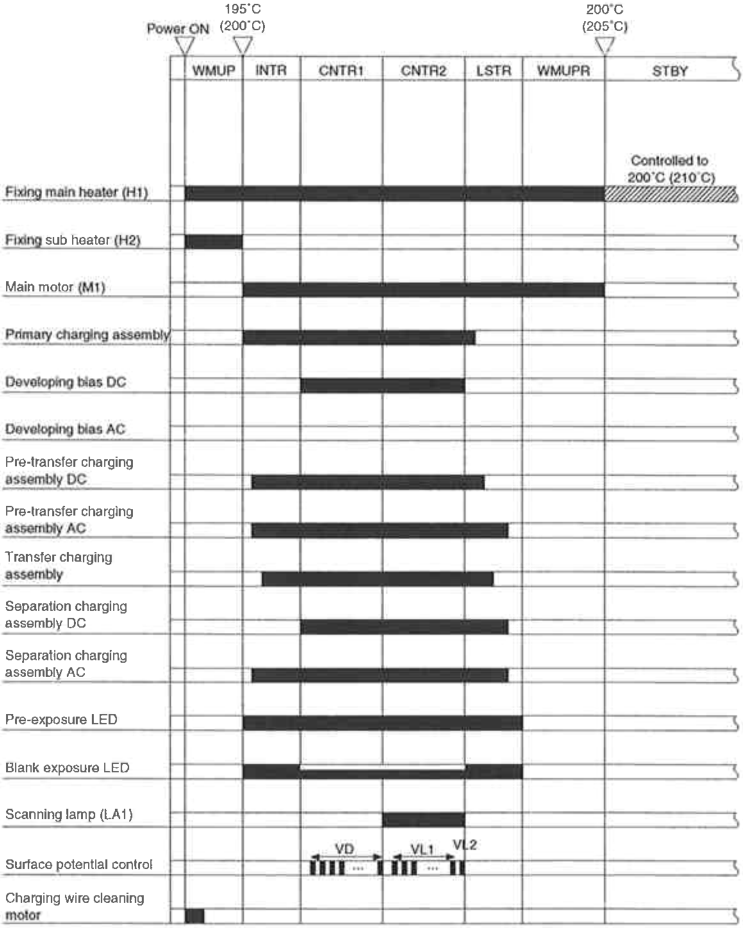
*2. When the power switch is turned ON, the primary, pre-transfer, transfer, and separation charging wires are cleaned if the surface temperature of the fixing roller is 100°C or less.

*3. Wait-up is executed in 10 sec after the end of potential control to speed up warm-up.

Figure 2-103

2. Basic Sequence of Operations at Power-On (2/2)

The following sequence applies when the surface temperature of the fixing roller is 75°C at power-on and, in addition, the ambient temperature is 17°C or more.


Power ON
195°C
(200°C)
200°C
(205°C)
WMUP
INTR
CNTR1
CNTR2
LSTR
WMUPR
STBY
Controlled to
200°C (210°C)
Fixing main heater (H1)
Fixing sub heater (H2)
Main motor (M1)
Primary charging assembly
Developing bias DC
Developing bias AC
Pre-transfer charging assembly DC
Pre-transfer charging assembly AC
Transfer charging assembly
Separation charging assembly DC
Separation charging assembly AC
Pre-exposure LED
Blank exposure LED
Scanning lamp (LA1)
Surface potential control
VD
VL1
VL2
Charging wire cleaning motor

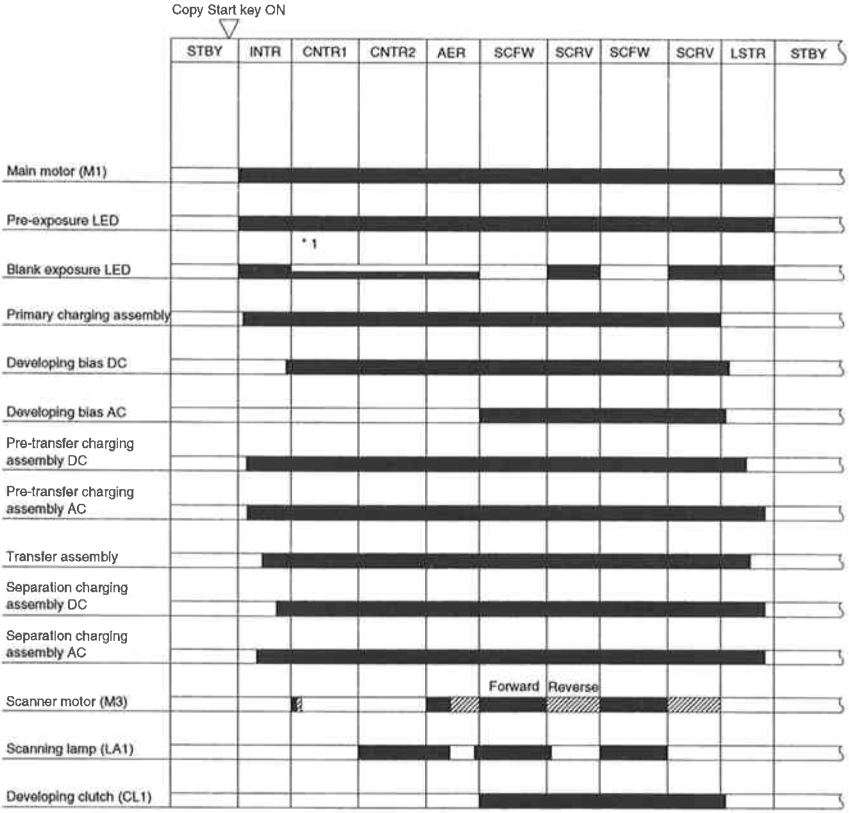
- The difference from the basic sequence of operations (1/2) is that WMUPR is executed until the surface temperature of the fixing roller reaches 200°C (210°C) by not ending LSTR in 10 sec after the end of potential control (CNTR1, CNTR2).
- The value within parentheses applies when the ambient temperature is 17°C or less and, in addition, the surface temperature of the fixing roller at power-on is 75°C or less.
  The value outside the parentheses applies when the surface temperature is 75°C or more.

Figure 2-104

Period			Function	Remarks
WAIT (wait)	WMUP (warm up)	From when the power switch is turned ON until the surface temperature of the fixing assembly upper roller reaches 195°C.	• Waits until the fixing assembly warms.	• If the surface temperature of the fixing roller is 100°C or less when the power switch is turned ON, the primary, pre-transfer, separation, and transfer charging wires are cleaned. • The lens moves to Direct position (A4 width, 297 mm).
	INTR (initial rotation)	From the end of WMUP until CNTGR1 starts after the surface temperature of the fixing assembly upper roller has reached 195°C.	• Evens out the surface temperature of the fixing assembly roller. • Discharges copy paper, if any.	
	CNTR1 (control rotation 1)	For about 5 sec after the end of INTR.	Measures the drum surface potential VD.	
	CNTR2 (control rotation 2)	For about 5 sec after the end of CNTR1.	Measures the drum surface potential VL.	A bias value (DC component) of the developing bias for copying is determined according to the measurements taken of VL2.
	LSTR (last rotation)	While the photosensitive drum makes a single rotation.	Cleans the surface of the drum as post-treatment (removes charges).	
STBY		Until the Copy Start key is pressed or the power switch is turned OFF after the end of LSTR.	• Waits for a press on the Copy Start key or other operation key.	• The indications on the control panel switch to standard mode 2 min after the end of LSTR. • Copying will start if the Copy Start key was pressed after placing an original during the wait period (auto start).

Table 2-101

3. Basic Sequence of Operations during Copying



*1 Turns OFF blank exposure LEDs corresponding to the potential sensor for potential measurement (VD, VL1, VL2).

Figure 2-105

Period		Function	Remarks
INTR (initial rotation)	From when the Copy Start key is pressed until CNTR1 starts.	Stabilizes the sensitivity of the drum in preparation for copying.	• Moves the lens. If the lens does not reach a specific position within a specific period of time, INTR is continued until the lens reaches the position.
CNTR1 (control rotation 1)	For about 5 sec after the end of INTR.	Controls the drum surface potential VD.	The scanner motor is rotated in reverse before potential control, thereby returning the scanner to home position.
CNTR2 (control rotation 2)	For about 5 sec after the end of CNTR1.	Controls the drum surface potential VL.	The value of the developing bias (DC component) is determined for copying according to the measurements taken of VL2.
AER (AE rotation)	Until the scanner returns to home position after having moved forward about 120 mm.	Measures the density of the original while the scanner is moving in reverse.	• Control is executed only in AE mode.
SCFW (scanner forward)	While the scanner is moving forward. • The distance over which the scanner moves forward varies according to the copy paper size and the reproduction ratio. • The speed at which the scanner moves forward varies according to the reproduction ratio.	The scanning lamp exposes the original, and the reflected optical image is projected on the photosensitive drum by way of mirrors and lenses.	• The registration signal is generated, and copy paper is moved to the transfer assembly. • The pick-up signal is generated, and the second sheet of copy paper is picked up.
SCRV (scanner forward)	While the scanner is moving in reverse.	• Returns the scanner to home position in preparation for the next copying run.	
LSTR (last rotation)	From the end of SCRV until the main motor stops.	The surface of the drum is cleaned (by removing charges).	Discharges the last sheet of copy paper.

Table 2-102

4. Basic Sequence of Operations for Page Separation

In page separation mode, the original on the left side of the copyboard is copied (CSFW1) and then the original on the right side of the copyboard is copied (SCFW2).

If the copy count is set to '2' or higher, the original on the left is copied for as many copies as specified; then, the original on the right is copied as specified.

The density of the original is measured in AE mode over a distance of 120 mm starting at its leading edge. Using the measurements, the originals on both left and right sides of the copyboard are copied.

Reference:

If the conditions of measurement indicated on p. 4-1 exist, potential control rotation (CNTR1, 2) is executed after the end of INTR.

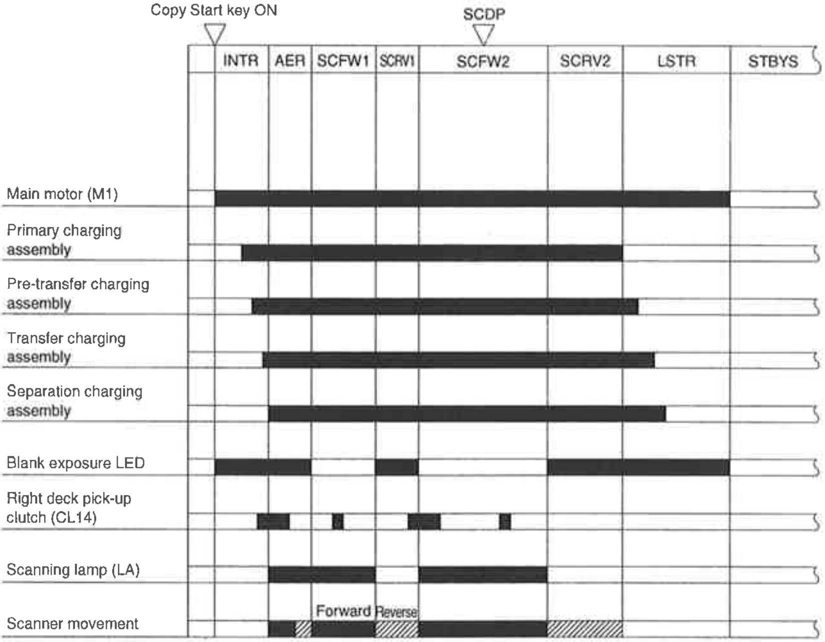

Copy Start key ON
SCDP
INTR
AER
SCFW1
SCRV1
SCFW2
SCRV2
LSTR
STBYS
Main motor (M1)
Primary charging assembly
Pre-transfer charging assembly
Transfer charging assembly
Separation charging assembly
Blank exposure LED
Right deck pick-up clutch (CL14)
Scanning lamp (LA)
Scanner movement
Forward
Reverse

Figure 2-106

Period		Function	Remarks
SCFW1 (scanner forward 1; copying original on left)	While the scanner is moving forward. • The distance over which the scanner moves forward varies according to the copy paper size and the reproduction ratio.	The scanning lamp exposes the original on the left of the copyboard, and the reflected optical images are projected to the photosensitive drum by way of mirrors and lenses.	• The registration signal is generated, and the copy paper is moved to the transfer assembly. • The pick-up signal is generated, and the next sheet of copy paper is picked up.
SCRV1 (scanner reverse 1)	From when the scanner moves in reverse until copy paper is discharged.	• The scanner is returned to home position in preparation for the next copying run. • The toner on the drum is transferred to the copy paper.	
SCSW2 (scanner forward 2; copying original on the right)	While the scanner is moving forward. • The distance over which the scanner moves forward varies according to the copy paper size and the reproduction ratio.	The scanning lamp exposes the original on the right side of the copyboard, and the reflected optical image is projected on the photosensitive drum through mirrors and lenses.	• The registration signal is generated using the SCDP signal so that the image leading edge of the original on the right and the copy paper match.
SCRV (scanner reverse 2)	From when the scanner moves in reverse until the developing clutch turns OFF.	• The scanner is returned to the home position in preparation for the next copying run. • The toner on the drum is transferred to the copy paper.	

Note: For copy sequences other than the above, see Table 2-102.

Table 2-103

D. Main Motor (M1) Control Circuit

1. Outline

Figure 2-107 is a block diagram showing the main motor control circuit, which has the following functions:

① Turning on and off the main motor.

② Controlling the main motor to a specific speed.

The main motor is a DC motor equipped with a built-in clock pulse generator. When the motor rotates, the clock pulse generator generates clock pulses (MMCLK) according to the revolution of the motor.

The main motor control PCB uses these clock pulses to ensure that the motor rotates at a specific speed.

The clock pulses (MMCLK) are frequency-divided to 1/4 and sent to the DC controller as clock pulses (M1FG) for sequence control.

2. Operations

a. Turning ON and OFF the Main Motor

When the main motor drive signal (M1ON) goes '1', the phase comparator circuit and the frequency circuit shown in Figure 2-107 generate control signals.

The control signals generated by both circuits are mixed and sent to the motor drive circuit, thereby turning on the motor drive circuit and ultimately rotating the main motor.

When M1ON goes '0', the control signal output stops and the signal remains '0', keeping the main motor from rotating.

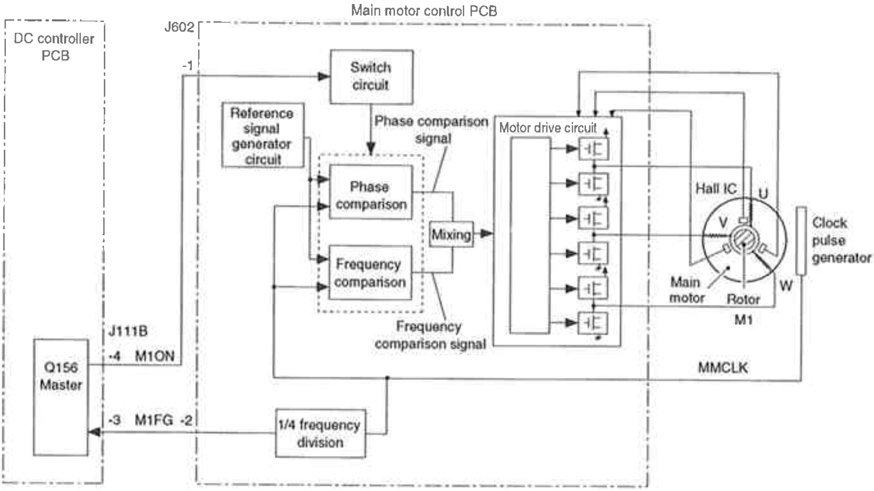

Main motor control PCB
DC controller PCB
J602
-1
Switch circuit
Reference signal generator circuit
Phase comparison signal
Motor drive circuit
Phase comparison
Mixing
Frequency comparison
Frequency comparison signal
Hall IC
U
V
W
Clock pulse generator
Main motor
Rotor
M1
J111B
-4 M1ON
Q156 Master
-3 M1FG -2
1/4 frequency division
MMCLK

Figure 2-107

b. Controlling the Main Motor to a Specific Speed

The copier's main motor is controlled so that it rotates at a specific speed.

The reference signal generator circuit on the motor control PCB generates reference pulses, which are sent to the phase comparator circuit and the frequency comparator circuit.

The phase comparator circuit generates control signal (phase comparison signal) so that the phase of the clock pulses (MMCLK) generated by the main motor and the phase of the reference pulses match.

Likewise, the frequency comparator circuit generates control signals (frequency comparison signal) so that the frequency of the clock pulses (MMCLK) generated by the main motor and the frequency of the reference pulses match.

Both phase comparison signal and frequency signal are mixed and sent to the motor drive circuit and used to control power to the main motor, thereby ensuring a specific revolution of the motor at all times.

3. Detecting an Error

If an excess load is imposed on the motor for some reason, the DC controller PCB detects an error in the clock pulses of the main motor; as a result, it will indicate 'E010' on the control panel with a message to that effect.

E. Inputs to the DC Controller

Inputs to the DC Controller (1/8)

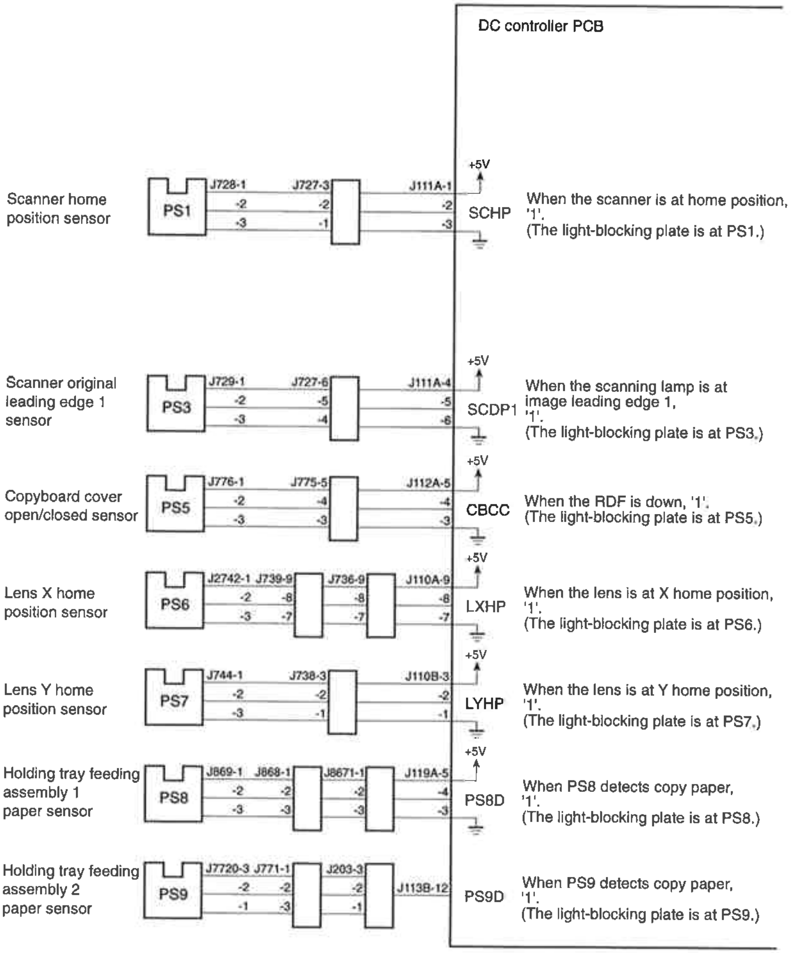
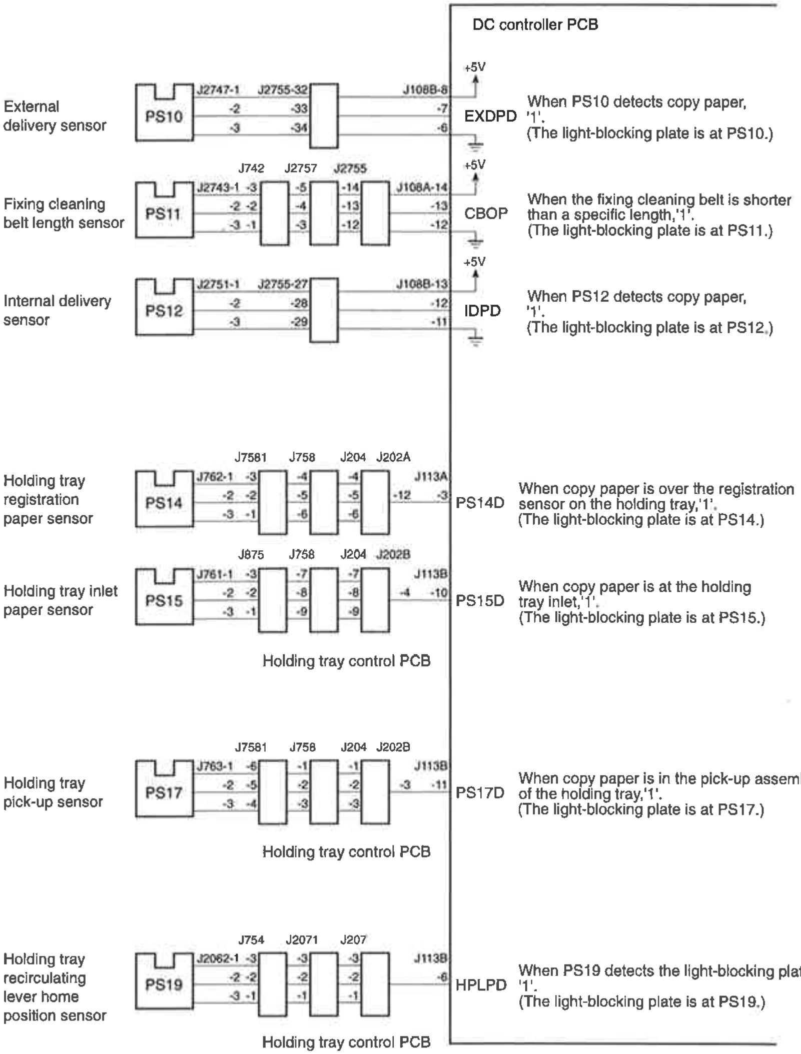

DC controller PCB
Scanner home position sensor
PS1
J728-1
-2
-3
J727-3
-2
-1
J111A-1
-2
-3
+5V
SCHP
When the scanner is at home position, '1'.
(The light-blocking plate is at PS1.)
Scanner original leading edge 1 sensor
PS3
J729-1
-2
-3
J727-6
-5
-4
J111A-4
-5
-6
+5V
SCDP1
When the scanning lamp is at image leading edge 1, '1'.
(The light-blocking plate is at PS3.)
Copyboard cover open/closed sensor
PS5
J776-1
-2
-3
J775-5
-4
-3
J112A-5
-4
-3
+5V
CBCC
When the RDF is down, '1'.
(The light-blocking plate is at PS5.)
Lens X home position sensor
PS6
J2742-1
-2
-3
J739-9
-8
-7
J736-9
-8
-7
J110A-9
-8
-7
+5V
LXHP
When the lens is at X home position, '1'.
(The light-blocking plate is at PS6.)
Lens Y home position sensor
PS7
J744-1
-2
-3
J738-3
-2
-1
J110B-3
-2
-1
+5V
LYHP
When the lens is at Y home position, '1'.
(The light-blocking plate is at PS7.)
Holding tray feeding assembly 1 paper sensor
PS8
J869-1
-2
-3
J868-1
-2
-3
J8671-1
-2
-3
J119A-5
-4
-3
+5V
PS8D
When PS8 detects copy paper, '1'.
(The light-blocking plate is at PS8.)
Holding tray feeding assembly 2 paper sensor
PS9
J7720-3
-2
-1
J771-1
-2
-3
J203-3
-2
-1
J113B-12
PS9D
When PS9 detects copy paper, '1'.
(The light-blocking plate is at PS9.)

Figure 2-108

Inputs to the DC Controller (2/8)


DC controller PCB
External delivery sensor
PS10
J2747-1 -2 -3
J2755-32 -33 -34
J108B-8 -7 -6
+5V
EXDPD
Fixing cleaning belt length sensor
PS11
J742 J2757 J2755
J2743-1 -3 -2 -2 -3 -1
-5 -4 -3
-14 -13 -12
J108A-14 -13 -12
+5V
CBOP
Internal delivery sensor
PS12
J2751-1 -2 -3
J2755-27 -28 -29
J108B-13 -12 -11
+5V
IDPD
Holding tray registration paper sensor
PS14
J7581 J758 J204 J202A
J762-1 -3 -2 -2 -3 -1
-4 -5 -6
-4 -5 -6
-12
J113A -3
PS14D
Holding tray inlet paper sensor
PS15
J875 J758 J204 J202B
J761-1 -3 -2 -2 -3 -1
-7 -8 -9
-7 -8 -9
-4
J113B -10
PS15D
Holding tray control PCB
Holding tray pick-up sensor
PS17
J7581 J758 J204 J202B
J763-1 -6 -2 -5 -3 -4
-1 -2 -3
-1 -2 -3
-3
J113B -11
PS17D
Holding tray control PCB
Holding tray recirculating lever home position sensor
PS19
J754 J2071 J207
J2062-1 -3 -2 -2 -3 -1
-3 -2 -1
-3 -2 -1
J113B -6
HPLPD
Holding tray control PCB

When PS10 detects copy paper, '1'.
(The light-blocking plate is at PS10.)

When the fixing cleaning belt is shorter than a specific length,'1'.
(The light-blocking plate is at PS11.)

When PS12 detects copy paper, '1'.
(The light-blocking plate is at PS12.)

When copy paper is over the registration sensor on the holding tray,'1'.
(The light-blocking plate is at PS14.)

When copy paper is at the holding tray inlet,'1'.
(The light-blocking plate is at PS15.)

When copy paper is in the pick-up assembly of the holding tray,'1'.
(The light-blocking plate is at PS17.)

When PS19 detects the light-blocking plate, '1'.
(The light-blocking plate is at PS19.)

Figure 2-109

Inputs to the DC Controller (3/8)

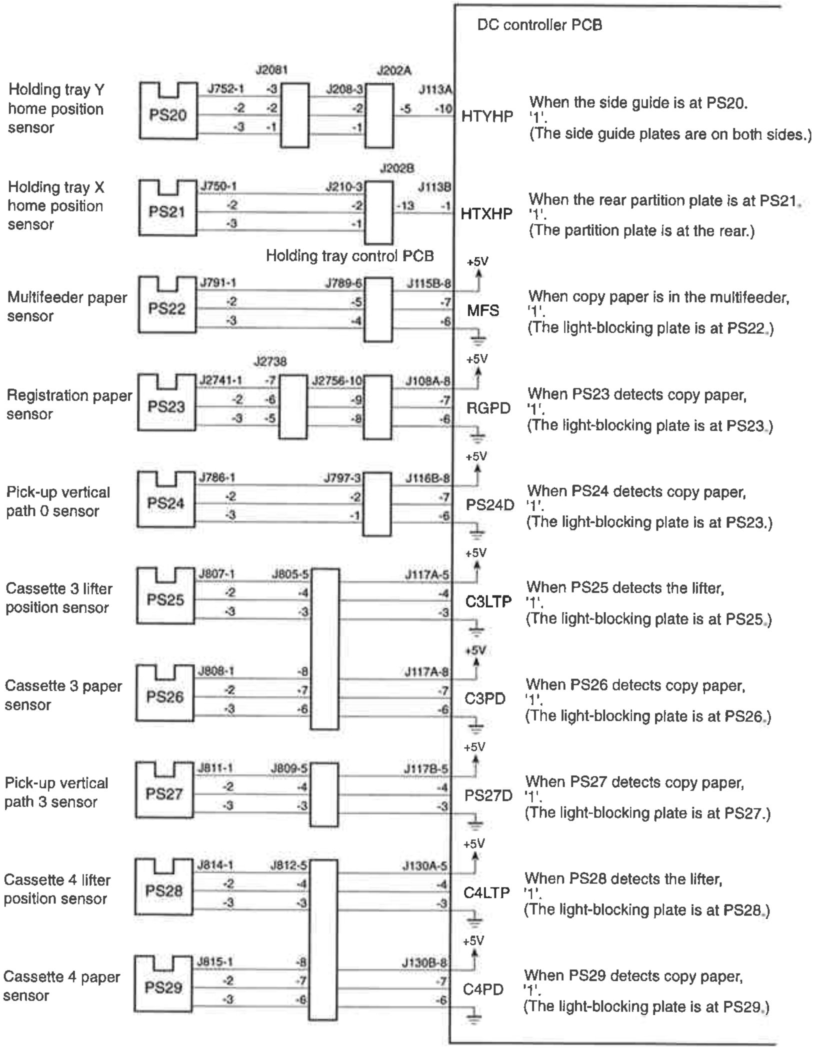
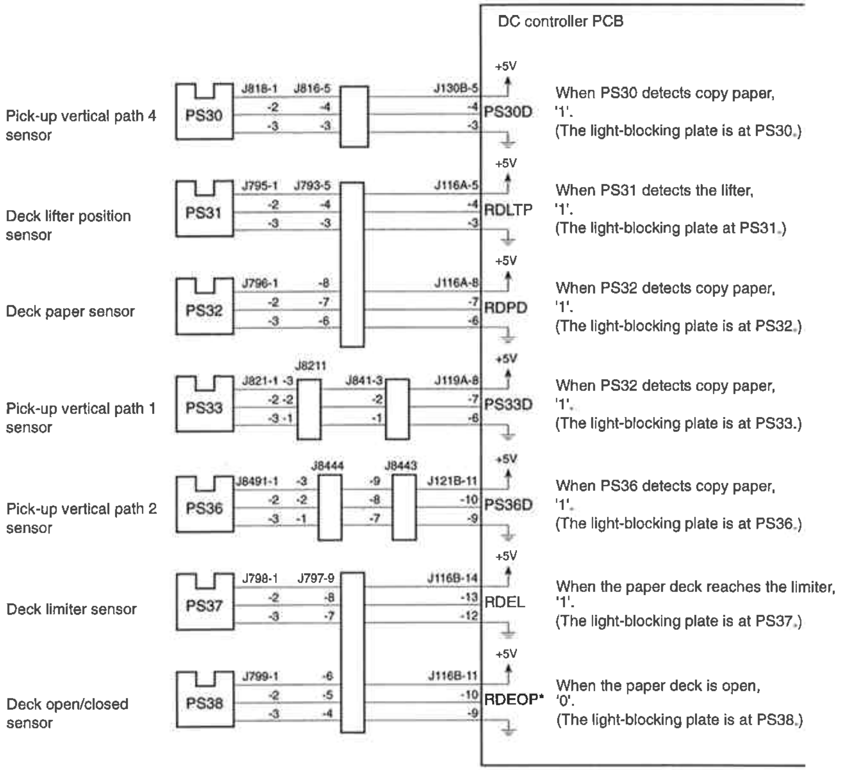

DC controller PCB
Holding tray Y home position sensor
PS20
J752-1
-2
-3
J2081
-3
-2
-1
J208-3
-2
-1
J202A
-5
J113A
-10
HTYHP
When the side guide is at PS20.
'1'.
(The side guide plates are on both sides.)
Holding tray X home position sensor
PS21
J750-1
-2
-3
J210-3
-2
-1
J202B
-13
J113B
-1
HTXHP
When the rear partition plate is at PS21.
'1'.
(The partition plate is at the rear.)
Holding tray control PCB
+5V
Multifeeder paper sensor
PS22
J791-1
-2
-3
J789-6
-5
-4
J115B-8
-7
-6
MFS
When copy paper is in the multifeeder,
'1'.
(The light-blocking plate is at PS22.)
+5V
Registration paper sensor
PS23
J2741-1
-2
-3
J2738
-7
-6
-5
J2756-10
-9
-8
J108A-8
-7
-6
RGPD
When PS23 detects copy paper,
'1'.
(The light-blocking plate is at PS23.)
+5V
Pick-up vertical path 0 sensor
PS24
J786-1
-2
-3
J797-3
-2
-1
J116B-8
-7
-6
PS24D
When PS24 detects copy paper,
'1'.
(The light-blocking plate is at PS23.)
+5V
Cassette 3 lifter position sensor
PS25
J807-1
-2
-3
J805-5
-4
-3
J117A-5
-4
-3
C3LTP
When PS25 detects the lifter,
'1'.
(The light-blocking plate is at PS25.)
+5V
Cassette 3 paper sensor
PS26
J808-1
-2
-3
-8
-7
-6
J117A-8
-7
-6
C3PD
When PS26 detects copy paper,
'1'.
(The light-blocking plate is at PS26.)
+5V
Pick-up vertical path 3 sensor
PS27
J811-1
-2
-3
J809-5
-4
-3
J117B-5
-4
-3
PS27D
When PS27 detects copy paper,
'1'.
(The light-blocking plate is at PS27.)
+5V
Cassette 4 lifter position sensor
PS28
J814-1
-2
-3
J812-5
-4
-3
J130A-5
-4
-3
C4LTP
When PS28 detects the lifter,
'1'.
(The light-blocking plate is at PS28.)
+5V
Cassette 4 paper sensor
PS29
J815-1
-2
-3
-8
-7
-6
J130B-8
-7
-6
C4PD
When PS29 detects copy paper,
'1'.
(The light-blocking plate is at PS29.)

Figure 2-110

Inputs to the DC Controller (4/8)


DC controller PCB
Pick-up vertical path 4 sensor
PS30
J818-1 -2 -3
J816-5 -4 -3
J130B-5 -4 -3
+5V
PS30D
Deck lifter position sensor
PS31
J795-1 -2 -3
J793-5 -4 -3
J116A-5 -4 -3
+5V
RDLTP
Deck paper sensor
PS32
J796-1 -2 -3
-8 -7 -6
J116A-8 -7 -6
+5V
RDPD
Pick-up vertical path 1 sensor
PS33
J8211
J821-1 -3 -2 -2 -3 -1
J841-3 -2 -1
J119A-8 -7 -6
+5V
PS33D
Pick-up vertical path 2 sensor
PS36
J8444
J8443
J8491-1 -3 -2 -2 -3 -1
-9 -8 -7
J121B-11 -10 -9
+5V
PS36D
Deck limiter sensor
PS37
J798-1 -2 -3
J797-9 -8 -7
J116B-14 -13 -12
+5V
RDEL
Deck open/closed sensor
PS38
J799-1 -2 -3
-6 -5 -4
J116B-11 -10 -9
+5V
RDEOP*

When PS30 detects copy paper, '1'.
(The light-blocking plate is at PS30.)

When PS31 detects the lifter, '1'.
(The light-blocking plate at PS31.)

When PS32 detects copy paper, '1'.
(The light-blocking plate is at PS32.)

When PS32 detects copy paper, '1'.
(The light-blocking plate is at PS33.)

When PS36 detects copy paper, '1'.
(The light-blocking plate is at PS36.)

When the paper deck reaches the limiter, '1'.
(The light-blocking plate is at PS37.)

When the paper deck is open, '0'.
(The light-blocking plate is at PS38.)

Figure 2-111

Inputs to the DC Controller (5/8)

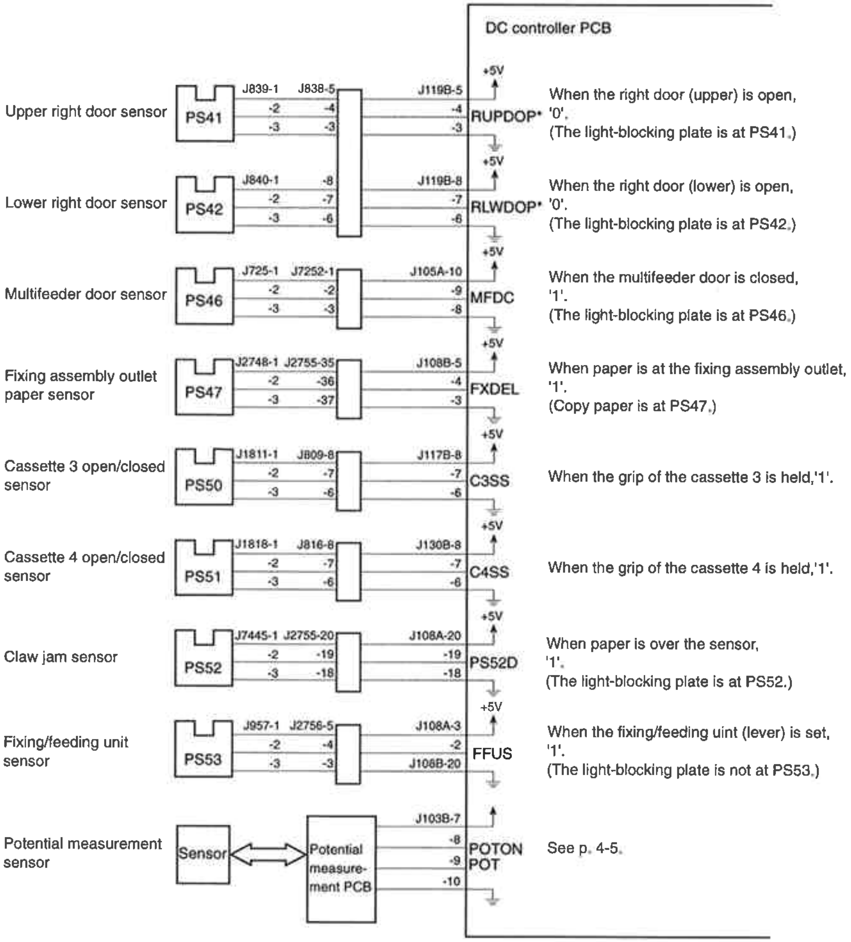
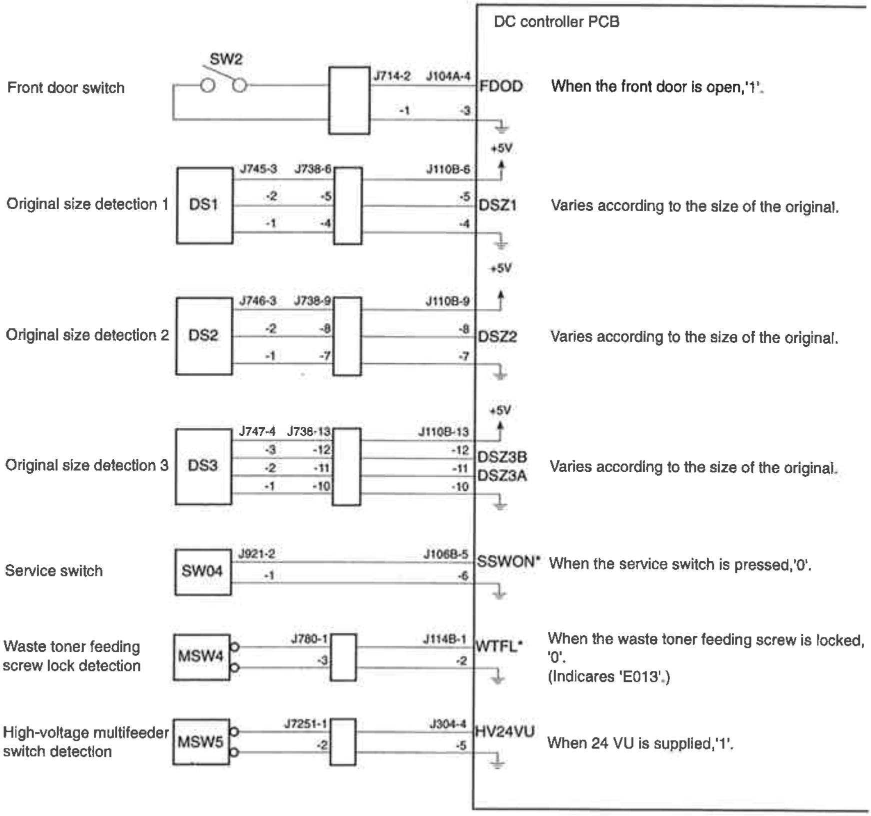

DC controller PCB
Upper right door sensor
PS41
J839-1
-2
-3
J838-5
-4
-3
J119B-5
-4
-3
+5V
RUPDOP*
When the right door (upper) is open, '0'.
(The light-blocking plate is at PS41.)
Lower right door sensor
PS42
J840-1
-2
-3
-8
-7
-6
J119B-8
-7
-6
+5V
RLWDOP*
When the right door (lower) is open, '0'.
(The light-blocking plate is at PS42.)
Multifeeder door sensor
PS46
J725-1
-2
-3
J7252-1
-2
-3
J105A-10
-9
-8
+5V
MFDC
When the multifeeder door is closed, '1'.
(The light-blocking plate is at PS46.)
Fixing assembly outlet paper sensor
PS47
J2748-1
-2
-3
J2755-35
-36
-37
J108B-5
-4
-3
+5V
FXDEL
When paper is at the fixing assembly outlet, '1'.
(Copy paper is at PS47.)
Cassette 3 open/closed sensor
PS50
J1811-1
-2
-3
J809-8
-7
-6
J117B-8
-7
-6
+5V
C3SS
When the grip of the cassette 3 is held,'1'.
Cassette 4 open/closed sensor
PS51
J1818-1
-2
-3
J816-8
-7
-6
J130B-8
-7
-6
+5V
C4SS
When the grip of the cassette 4 is held,'1'.
Claw jam sensor
PS52
J7445-1
-2
-3
J2755-20
-19
-18
J108A-20
-19
-18
+5V
PS52D
When paper is over the sensor, '1'.
(The light-blocking plate is at PS52.)
Fixing/feeding unit sensor
PS53
J957-1
-2
-3
J2756-5
-4
-3
J108A-3
-2
J108B-20
+5V
FFUS
When the fixing/feeding uint (lever) is set, '1'.
(The light-blocking plate is not at PS53.)
Potential measurement sensor
Sensor
Potential measure-ment PCB
J103B-7
-8
-9
-10
POTON
POT
See p. 4-5.

Figure 2-112

Inputs to the DC Controller (6/8)


DC controller PCB
SW2
Front door switch
J714-2
J104A-4
-1
-3
FDOD
+5V
J745-3
J738-6
J110B-6
Original size detection 1
DS1
-2
-5
-5
-1
-4
-4
DSZ1
+5V
J746-3
J738-9
J110B-9
Original size detection 2
DS2
-2
-8
-8
-1
-7
-7
DSZ2
+5V
J747-4
J738-13
J110B-13
Original size detection 3
DS3
-3
-12
-12
-2
-11
-11
-1
-10
-10
DSZ3B
DSZ3A
Service switch
SW04
J921-2
J106B-5
-1
-6
SSWON*
Waste toner feeding screw lock detection
MSW4
J780-1
J114B-1
-3
-2
WTFL*
High-voltage multifeeder switch detection
MSW5
J7251-1
J304-4
-2
-5
HV24VU

When the front door is open,'1'.

Varies according to the size of the original.

Varies according to the size of the original.

Varies according to the size of the original.

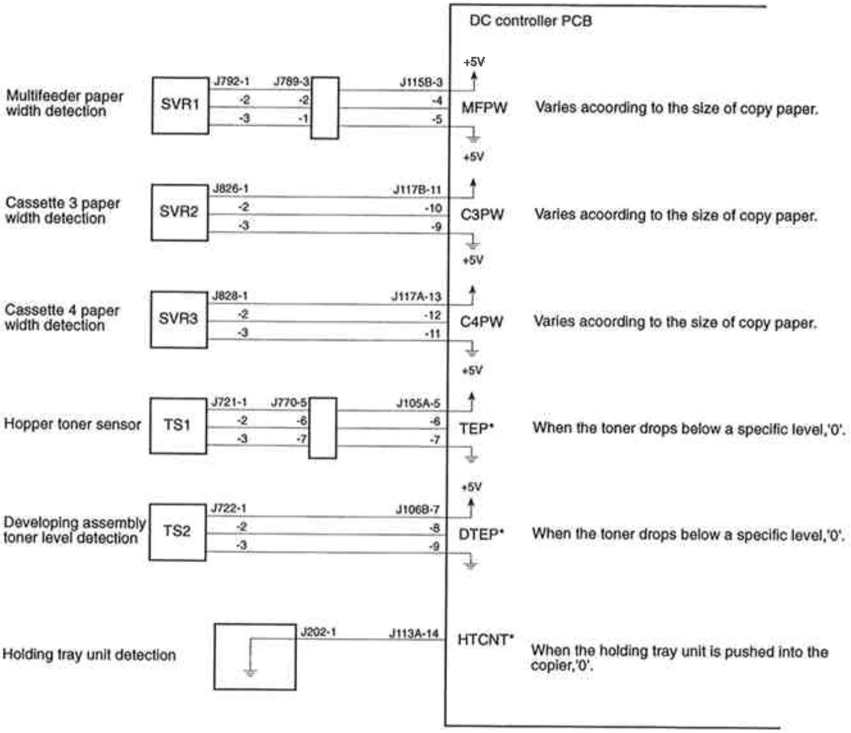
When the service switch is pressed,'0'.

When the waste toner feeding screw is locked, '0'.
(Indicares 'E013'.)

When 24 VU is supplied,'1'.

Figure 2-113

Inputs to the DC Controller (7/8)


DC controller PCB
Multifeeder paper width detection
SVR1
J792-1
-2
-3
J789-3
-2
-1
J115B-3
-4
-5
+5V
MFPW
Cassette 3 paper width detection
SVR2
J826-1
-2
-3
J117B-11
-10
-9
+5V
C3PW
Cassette 4 paper width detection
SVR3
J828-1
-2
-3
J117A-13
-12
-11
+5V
C4PW
Hopper toner sensor
TS1
J721-1
-2
-3
J770-5
-6
-7
J105A-5
-6
-7
+5V
TEP*
Developing assembly toner level detection
TS2
J722-1
-2
-3
J106B-7
-8
-9
+5V
DTEP*
Holding tray unit detection
J202-1
J113A-14
HTCNT*

Varies according to the size of copy paper.

Varies according to the size of copy paper.

Varies according to the size of copy paper.

When the toner drops below a specific level,'0'.

When the toner drops below a specific level,'0'.

When the holding tray unit is pushed into the copier,'0'.

Figure 2-114

Inputs to the DC Controller (8/8)

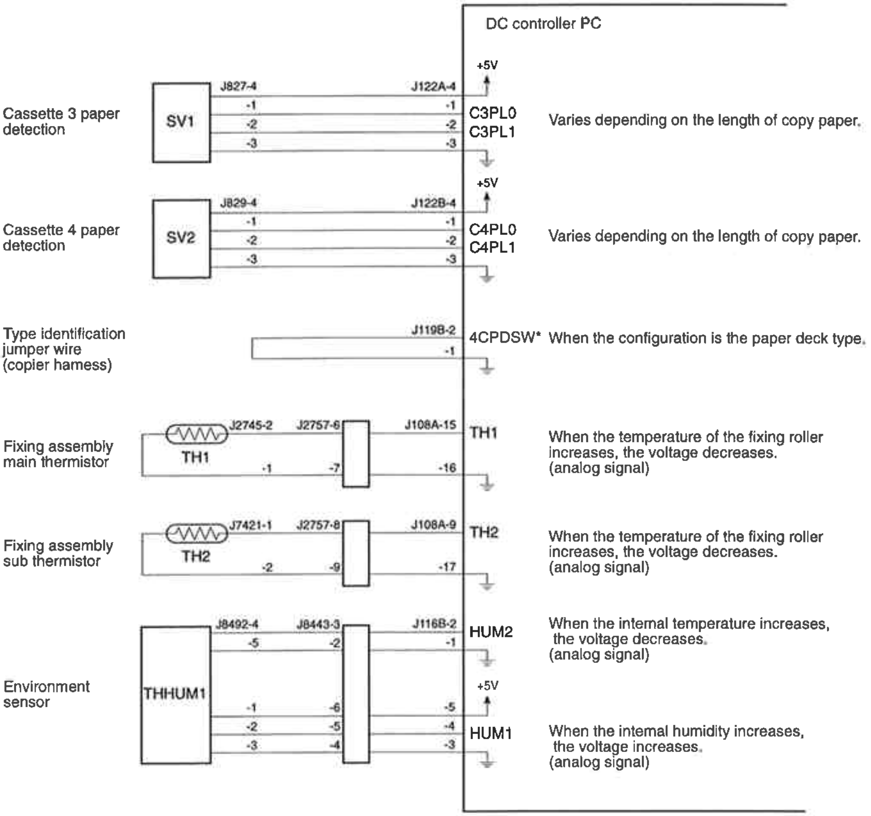

DC controller PC
Cassette 3 paper detection
SV1
J827-4
-1
-2
-3
J122A-4
-1
-2
-3
+5V
C3PL0
C3PL1
Varies depending on the length of copy paper.
Cassette 4 paper detection
SV2
J829-4
-1
-2
-3
J122B-4
-1
-2
-3
+5V
C4PL0
C4PL1
Varies depending on the length of copy paper.
Type identification jumper wire (copier harness)
J119B-2
-1
4CPDSW*
When the configuration is the paper deck type.
Fixing assembly main thermistor
TH1
J2745-2
-1
J2757-6
-7
J108A-15
-16
TH1
When the temperature of the fixing roller increases, the voltage decreases. (analog signal)
Fixing assembly sub thermistor
TH2
J7421-1
-2
J2757-8
-9
J108A-9
-17
TH2
When the temperature of the fixing roller increases, the voltage decreases. (analog signal)
Environment sensor
THHUM1
J8492-4
-5
-1
-2
-3
J8443-3
-2
-6
-5
-4
J116B-2
-1
-5
-4
-3
+5V
HUM2
When the internal temperature increases, the voltage decreases. (analog signal)
HUM1
When the internal humidity increases, the voltage increases. (analog signal)

Figure 2-115

F. Outputs from the DC Controller

Outputs from the DC Controller (1/11)
(120V model)

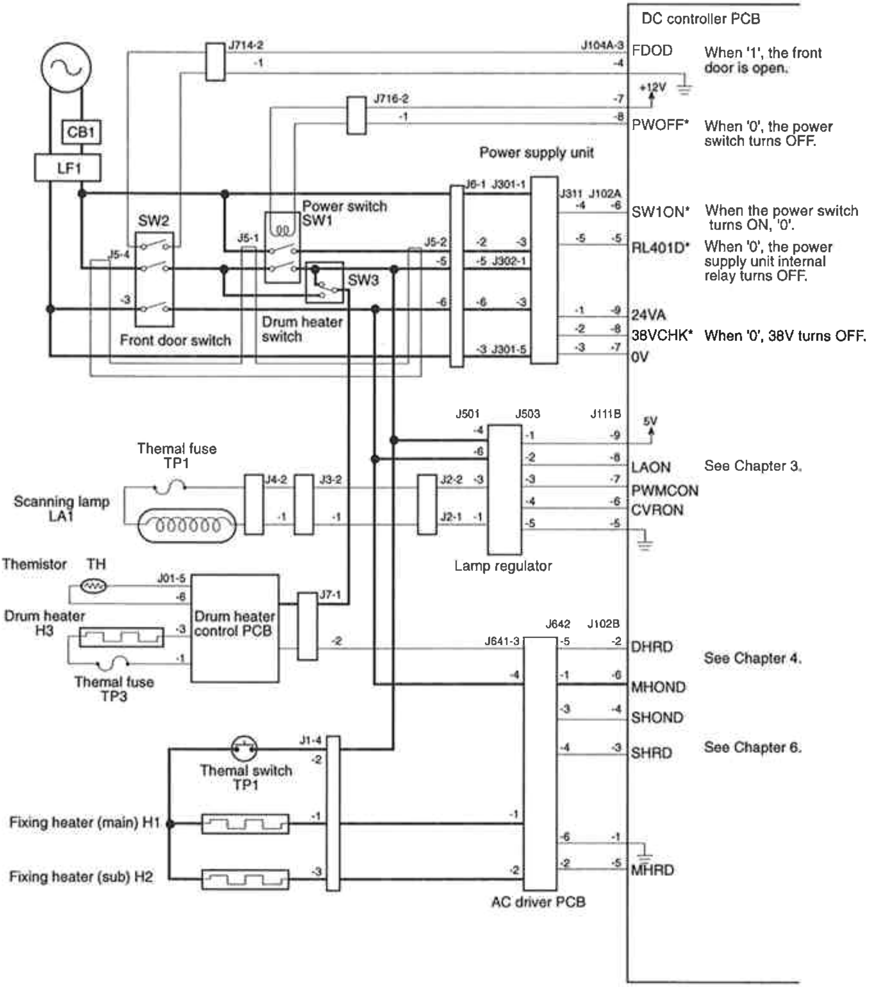

DC controller PCB
J714-2
-1
J104A-3
-4
FDOD
When '1', the front door is open.
+12V
J716-2
-1
-7
-8
PWOFF*
When '0', the power switch turns OFF.
CB1
LF1
Power supply unit
J6-1 J301-1
J311 J102A
-4 -6
SW1ON*
When the power switch turns ON, '0'.
SW2
Power switch SW1
J5-1
J5-4
J5-2
-2 -3
-5 -5
RL401D*
When '0', the power supply unit internal relay turns OFF.
-5 J302-1
SW3
-3
-6
-6 -3
-1 -9
24VA
-2 -8
38VCHK*
When '0', 38V turns OFF.
Drum heater switch
Front door switch
-3 J301-5
-3 -7
0V
J501
J503
J111B
5V
-4 -1 -9
-6 -2 -8
LAON
See Chapter 3.
Thermal fuse TP1
J4-2
J3-2
J2-2 -3
-3 -7
PWMCON
Scanning lamp LA1
-1
-1
J2-1 -1
-4 -6
CVRON
-5 -5
Lamp regulator
Themistor TH
J01-5
-6
J7-1
Drum heater H3
-3
Drum heater control PCB
-1
-2
J642 J102B
J641-3
-5 -2
DHRD
See Chapter 4.
Thermal fuse TP3
-4
-1 -6
MHOND
-3 -4
SHOND
J1-4
-2
-4 -3
SHRD
See Chapter 6.
Thermal switch TP1
Fixing heater (main) H1
-1
-1
-6 -1
Fixing heater (sub) H2
-3
-2
-2 -5
MHRD
AC driver PCB

Figure 2-116a

Outputs from the DC Controller (1/11) (220/240V model)

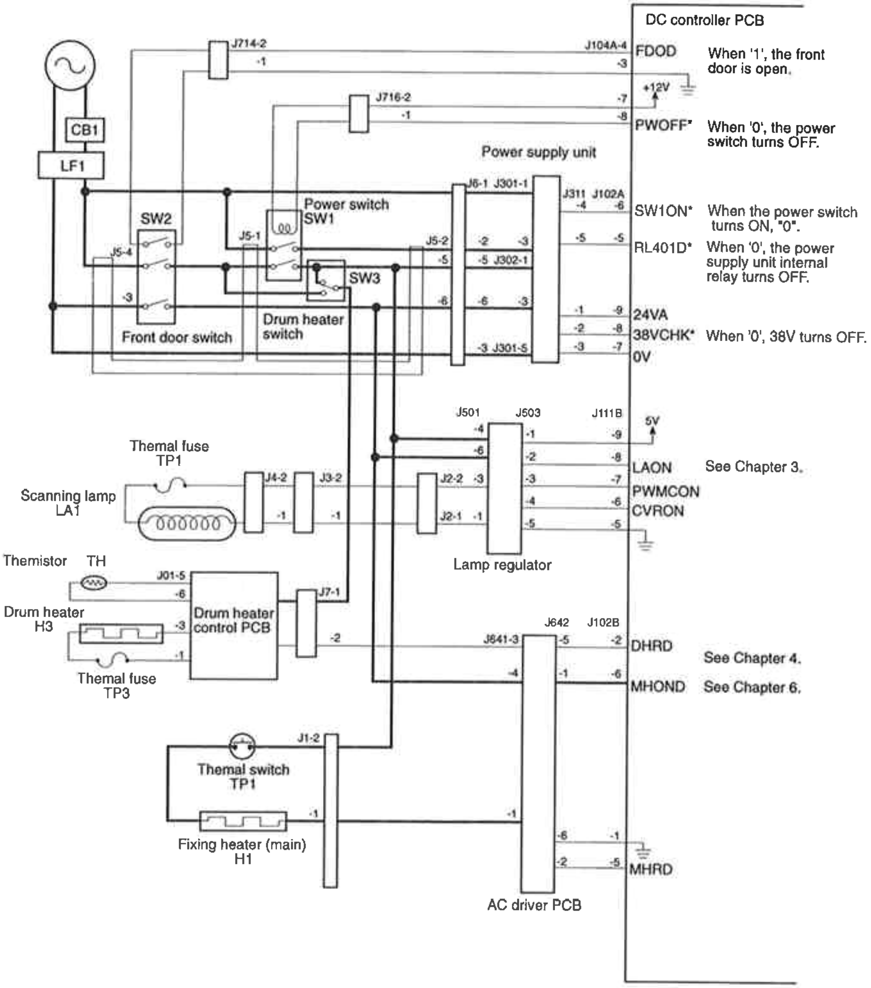

DC controller PCB
J714-2
-1
J104A-4
-3
FDOD
When '1', the front door is open.
+12V
J716-2
-1
-7
-8
PWOFF*
When '0', the power switch turns OFF.
CB1
LF1
Power supply unit
J6-1 J301-1
J311 J102A
-4 -6
SW1ON*
When the power switch turns ON, "0".
Power switch SW1
SW2
J5-1
J5-4
J5-2
-2 -3
-5 -5
RL401D*
When '0', the power supply unit internal relay turns OFF.
-5 -5 J302-1
SW3
-3
-6 -6 -3
-1 -9
24VA
-2 -8
38VCHK*
When '0', 38V turns OFF.
Front door switch
Drum heater switch
-3 J301-5
-3 -7
0V
J501
J503
J111B
5V
-4
-1
-9
-6
-2
-8
Themal fuse TP1
LAON
See Chapter 3.
J4-2
J3-2
J2-2 -3
-3
-7
PWMCON
Scanning lamp LA1
-4
-6
CVRON
-1
-1
J2-1 -1
-5
-5
Lamp regulator
Themistor TH
J01-5
-6
Drum heater H3
-3
Drum heater control PCB
J7-1
J642
J102B
J641-3
-5
-2
DHRD
-2
See Chapter 4.
-1
Themal fuse TP3
-4
-1
-6
MHOND
See Chapter 6.
J1-2
Themal switch TP1
-1
-1
-6
-1
Fixing heater (main) H1
-2
-5
MHRD
AC driver PCB

Figure 2-116b

Outputs from the DC Controller (2/11)

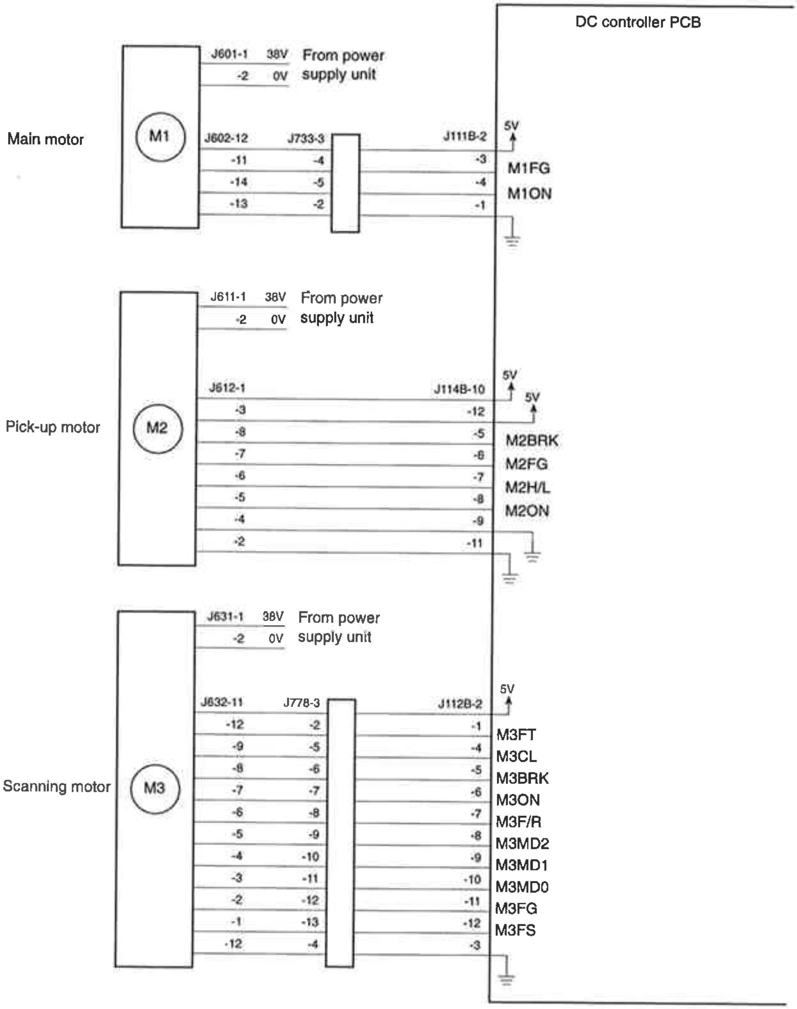

DC controller PCB
Main motor
M1
J601-1
-2
38V
0V
From power supply unit
J602-12
-11
-14
-13
J733-3
-4
-5
-2
J111B-2
-3
-4
-1
5V
M1FG
M1ON
Pick-up motor
M2
J611-1
-2
38V
0V
From power supply unit
J612-1
-3
-8
-7
-6
-5
-4
-2
J114B-10
-12
-5
-6
-7
-8
-9
-11
5V
5V
M2BRK
M2FG
M2H/L
M2ON
Scanning motor
M3
J631-1
-2
38V
0V
From power supply unit
J632-11
-12
-9
-8
-7
-6
-5
-4
-3
-2
-1
-12
J778-3
-2
-5
-6
-7
-8
-9
-10
-11
-12
-13
-4
J112B-2
-1
-4
-5
-6
-7
-8
-9
-10
-11
-12
-3
5V
M3FT
M3CL
M3BRK
M3ON
M3F/R
M3MD2
M3MD1
M3MD0
M3FG
M3FS

Figure 2-117

Outputs from the DC Controller (3/11)

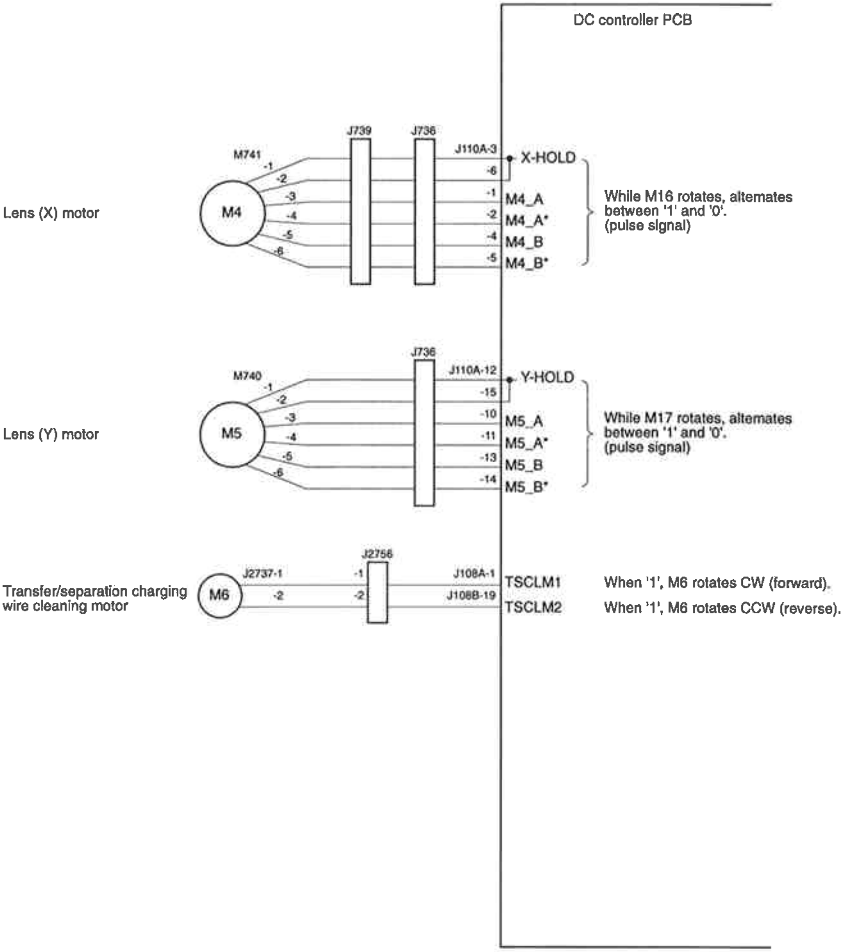

DC controller PCB
J739
J736
M741
J110A-3
-6
-1
-2
-4
-5
X-HOLD
M4_A
M4_A*
M4_B
M4_B*
While M16 rotates, alternates between '1' and '0'. (pulse signal)
Lens (X) motor
M4
-1
-2
-3
-4
-5
-6
J736
M740
J110A-12
-15
-10
-11
-13
-14
Y-HOLD
M5_A
M5_A*
M5_B
M5_B*
While M17 rotates, alternates between '1' and '0'. (pulse signal)
Lens (Y) motor
M5
-1
-2
-3
-4
-5
-6
J2756
J2737-1
-2
-1
-2
J108A-1
J108B-19
TSCLM1
TSCLM2
When '1', M6 rotates CW (forward).
When '1', M6 rotates CCW (reverse).
Transfer/separation charging wire cleaning motor
M6

Figure 2-118

Outputs from the DC Controller (4/11)

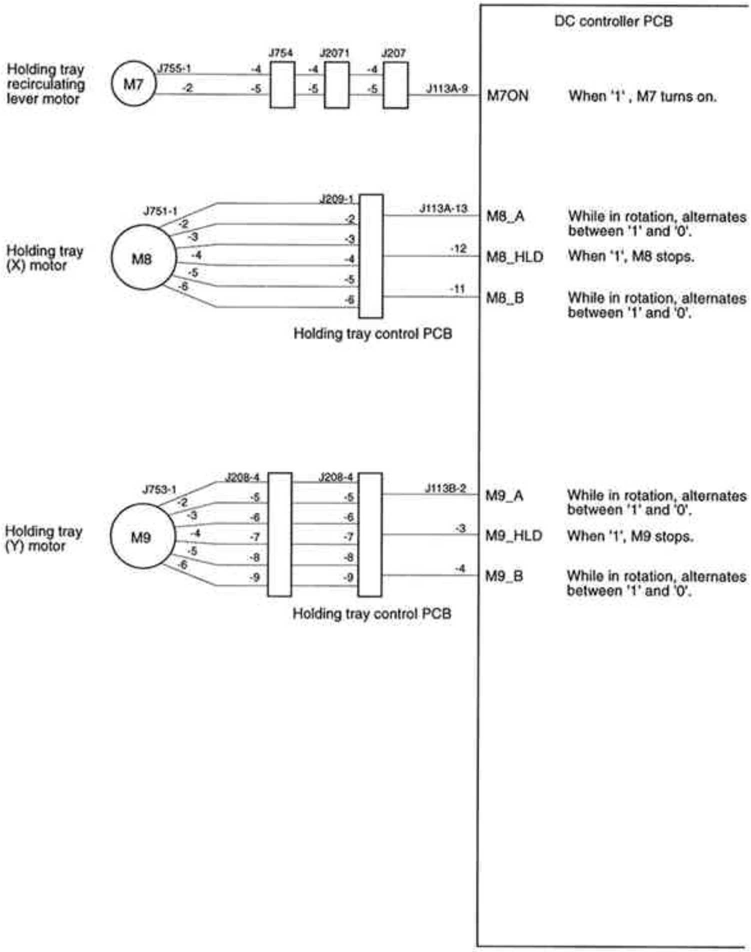

DC controller PCB
Holding tray recirculating lever motor
M7
J755-1
-2
J754
J2071
J207
-4
-5
-4
-5
-4
-5
J113A-9
M7ON
When '1' , M7 turns on.
Holding tray (X) motor
M8
J751-1
-2
-3
-4
-5
-6
J209-1
-2
-3
-4
-5
-6
J113A-13
-12
-11
M8_A
While in rotation, alternates between '1' and '0'.
M8_HLD
When '1', M8 stops.
M8_B
While in rotation, alternates between '1' and '0'.
Holding tray control PCB
Holding tray (Y) motor
M9
J753-1
-2
-3
-4
-5
-6
J208-4
-5
-6
-7
-8
-9
J208-4
-5
-6
-7
-8
-9
J113B-2
-3
-4
M9_A
While in rotation, alternates between '1' and '0'.
M9_HLD
When '1', M9 stops.
M9_B
While in rotation, alternates between '1' and '0'.
Holding tray control PCB

Figure 2-119

Outputs from the DC Controller (5/11)

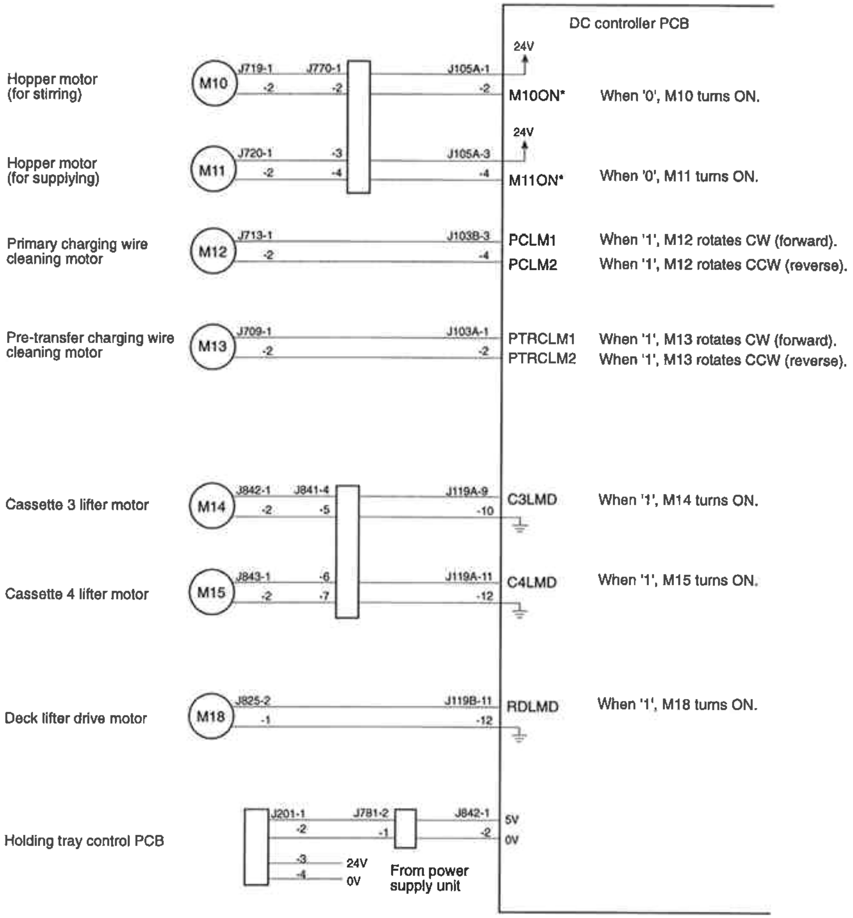
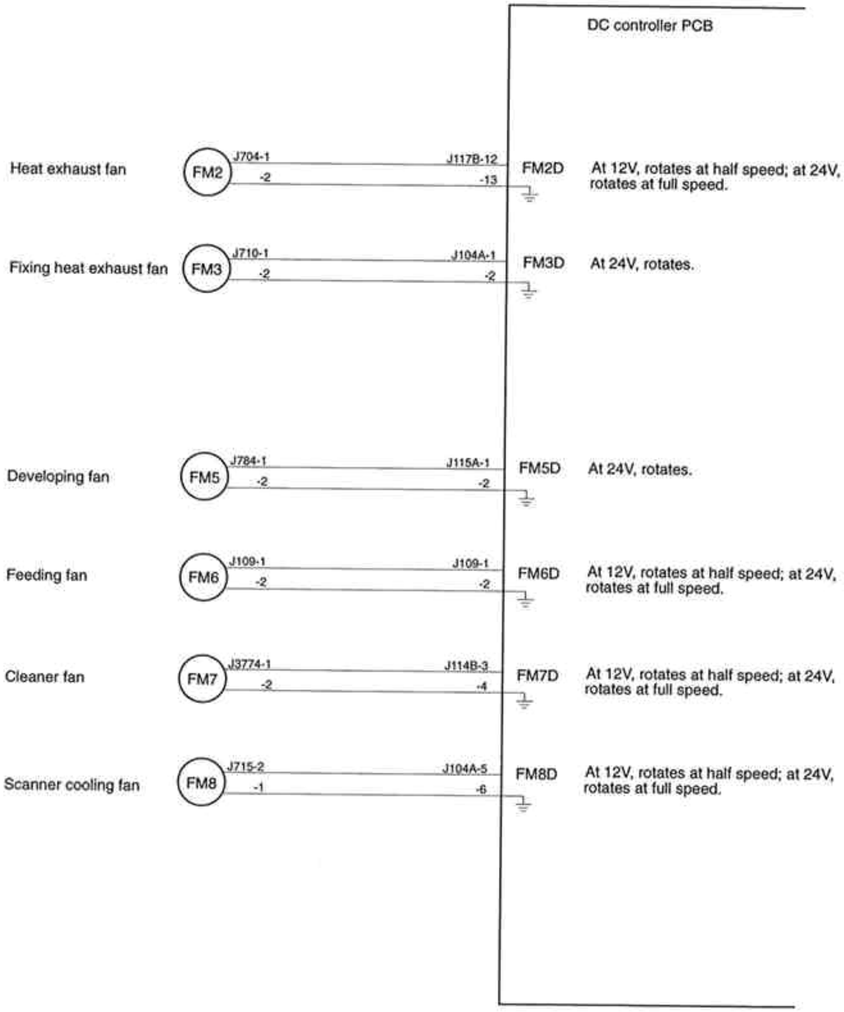

DC controller PCB
24V
Hopper motor (for stirring)
M10
J719-1
-2
J770-1
-2
J105A-1
-2
M10ON*
When '0', M10 turns ON.
24V
Hopper motor (for supplying)
M11
J720-1
-2
-3
-4
J105A-3
-4
M11ON*
When '0', M11 turns ON.
Primary charging wire cleaning motor
M12
J713-1
-2
J103B-3
-4
PCLM1
PCLM2
When '1', M12 rotates CW (forward).
When '1', M12 rotates CCW (reverse).
Pre-transfer charging wire cleaning motor
M13
J709-1
-2
J103A-1
-2
PTRCLM1
PTRCLM2
When '1', M13 rotates CW (forward).
When '1', M13 rotates CCW (reverse).
Cassette 3 lifter motor
M14
J842-1
-2
J841-4
-5
J119A-9
-10
C3LMD
When '1', M14 turns ON.
Cassette 4 lifter motor
M15
J843-1
-2
-6
-7
J119A-11
-12
C4LMD
When '1', M15 turns ON.
Deck lifter drive motor
M18
J825-2
-1
J119B-11
-12
RDLMD
When '1', M18 turns ON.
Holding tray control PCB
J201-1
-2
-3
-4
24V
0V
J781-2
-1
From power supply unit
J842-1
-2
5V
0V

Figure 2-120

Outputs from the DC Controller (6/11)


DC controller PCB
Heat exhaust fan
FM2
J704-1
-2
J117B-12
-13
FM2D
Fixing heat exhaust fan
FM3
J710-1
-2
J104A-1
-2
FM3D
Developing fan
FM5
J784-1
-2
J115A-1
-2
FM5D
Feeding fan
FM6
J109-1
-2
J109-1
-2
FM6D
Cleaner fan
FM7
J3774-1
-2
J114B-3
-4
FM7D
Scanner cooling fan
FM8
J715-2
-1
J104A-5
-6
FM8D

FM2D: At 12V, rotates at half speed; at 24V, rotates at full speed.

FM3D: At 24V, rotates.

FM5D: At 24V, rotates.

FM6D: At 12V, rotates at half speed; at 24V, rotates at full speed.

FM7D: At 12V, rotates at half speed; at 24V, rotates at full speed.

FM8D: At 12V, rotates at half speed; at 24V, rotates at full speed.

Figure 2-121

Outputs from the DC Controller (7/11)

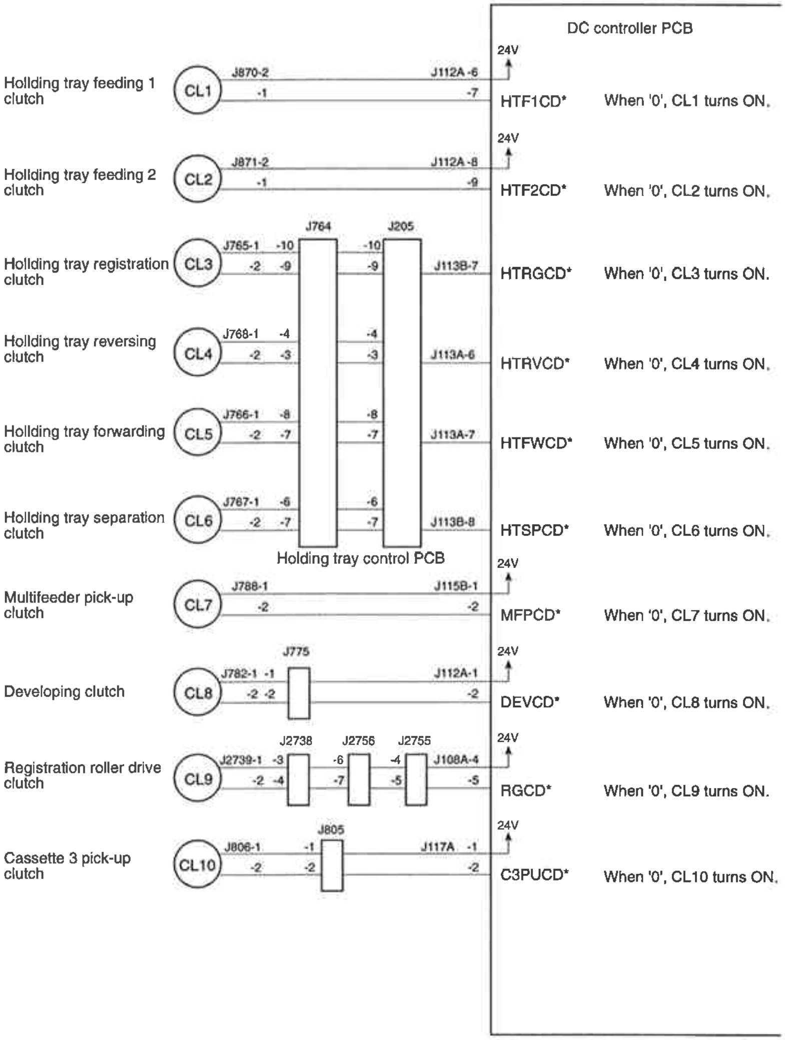

DC controller PCB
Hollding tray feeding 1 clutch
CL1
J870-2
-1
J112A-6
-7
24V
HTF1CD*
When '0', CL1 turns ON.
Hollding tray feeding 2 clutch
CL2
J871-2
-1
J112A-8
-9
24V
HTF2CD*
When '0', CL2 turns ON.
J764
J205
Hollding tray registration clutch
CL3
J765-1 -10
-2 -9
-10
-9
J113B-7
HTRGCD*
When '0', CL3 turns ON.
Hollding tray reversing clutch
CL4
J768-1 -4
-2 -3
-4
-3
J113A-6
HTRVCD*
When '0', CL4 turns ON.
Hollding tray forwarding clutch
CL5
J766-1 -8
-2 -7
-8
-7
J113A-7
HTFWCD*
When '0', CL5 turns ON.
Hollding tray separation clutch
CL6
J767-1 -6
-2 -7
-6
-7
J113B-8
HTSPCD*
When '0', CL6 turns ON.
Holding tray control PCB
Multifeeder pick-up clutch
CL7
J788-1
-2
J115B-1
-2
24V
MFPCD*
When '0', CL7 turns ON.
Developing clutch
CL8
J775
J782-1 -1
-2 -2
J112A-1
-2
24V
DEVCD*
When '0', CL8 turns ON.
Registration roller drive clutch
CL9
J2738
J2756
J2755
J2739-1 -3
-2 -4
-6
-7
-4
-5
J108A-4
-5
24V
RGCD*
When '0', CL9 turns ON.
Cassette 3 pick-up clutch
CL10
J805
J806-1
-2
-1
-2
J117A -1
-2
24V
C3PUCD*
When '0', CL10 turns ON.

Figure 2-122

Outputs from the DC Controller (8/11)

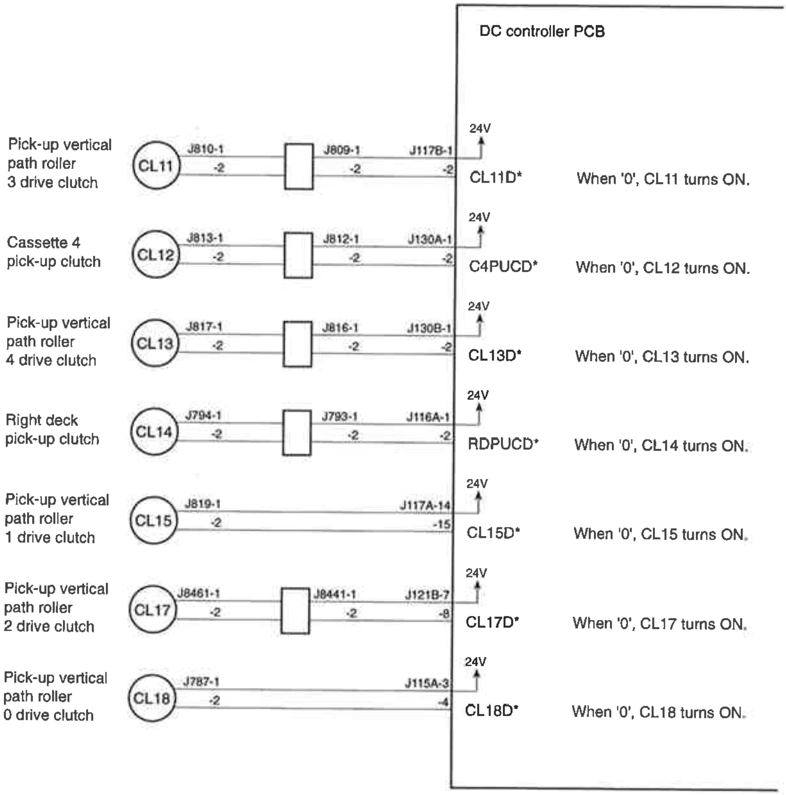

DC controller PCB
Pick-up vertical path roller 3 drive clutch
CL11
J810-1
-2
J809-1
-2
J117B-1
-2
24V
CL11D*
When '0', CL11 turns ON.
Cassette 4 pick-up clutch
CL12
J813-1
-2
J812-1
-2
J130A-1
-2
24V
C4PUCD*
When '0', CL12 turns ON.
Pick-up vertical path roller 4 drive clutch
CL13
J817-1
-2
J816-1
-2
J130B-1
-2
24V
CL13D*
When '0', CL13 turns ON.
Right deck pick-up clutch
CL14
J794-1
-2
J793-1
-2
J116A-1
-2
24V
RDPUCD*
When '0', CL14 turns ON.
Pick-up vertical path roller 1 drive clutch
CL15
J819-1
-2
J117A-14
-15
24V
CL15D*
When '0', CL15 turns ON.
Pick-up vertical path roller 2 drive clutch
CL17
J8461-1
-2
J8441-1
-2
J121B-7
-8
24V
CL17D*
When '0', CL17 turns ON.
Pick-up vertical path roller 0 drive clutch
CL18
J787-1
-2
J115A-3
-4
24V
CL18D*
When '0', CL18 turns ON.

Figure 2-123

Outputs from the DC Controller (9/11)

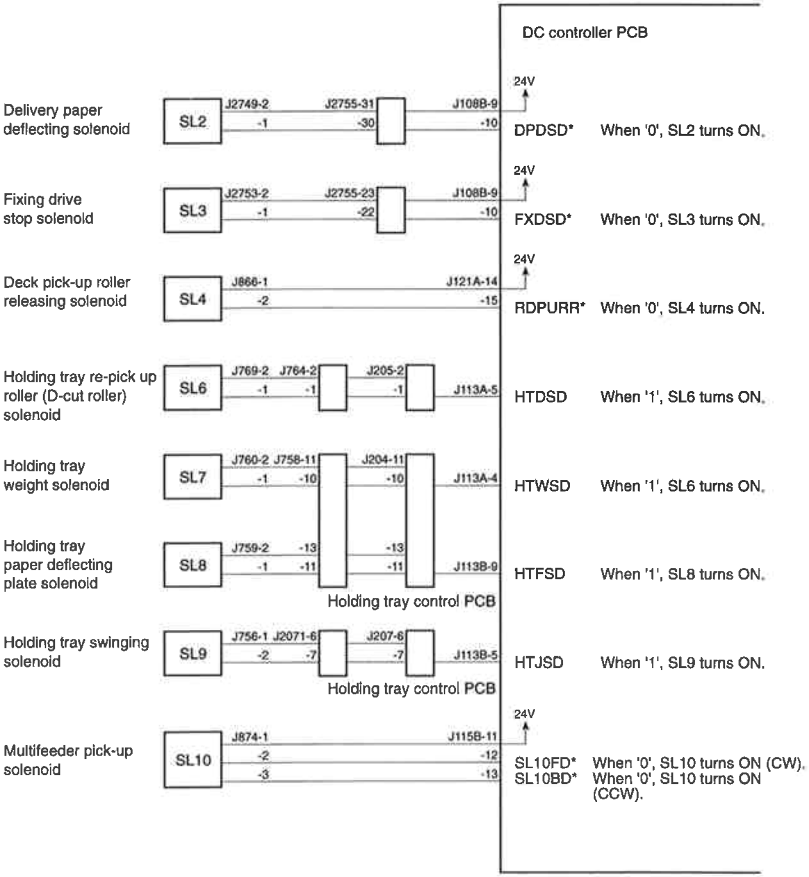

DC controller PCB
24V
Delivery paper deflecting solenoid
SL2
J2749-2
-1
J2755-31
-30
J108B-9
-10
DPDSD*
When '0', SL2 turns ON.
24V
Fixing drive stop solenoid
SL3
J2753-2
-1
J2755-23
-22
J108B-9
-10
FXDSD*
When '0', SL3 turns ON.
24V
Deck pick-up roller releasing solenoid
SL4
J866-1
-2
J121A-14
-15
RDPURR*
When '0', SL4 turns ON.
Holding tray re-pick up roller (D-cut roller) solenoid
SL6
J769-2
-1
J764-2
-1
J205-2
-1
J113A-5
HTDSD
When '1', SL6 turns ON.
Holding tray weight solenoid
SL7
J760-2
-1
J758-11
-10
J204-11
-10
J113A-4
HTWSD
When '1', SL6 turns ON.
Holding tray paper deflecting plate solenoid
SL8
J759-2
-1
-13
-11
-13
-11
J113B-9
HTFSD
When '1', SL8 turns ON.
Holding tray control PCB
Holding tray swinging solenoid
SL9
J756-1
-2
J2071-6
-7
J207-6
-7
J113B-5
HTJSD
When '1', SL9 turns ON.
Holding tray control PCB
24V
Multifeeder pick-up solenoid
SL10
J874-1
-2
-3
J115B-11
-12
-13
SL10FD*
When '0', SL10 turns ON (CW).
SL10BD*
When '0', SL10 turns ON (CCW).

Figure 2-124

Outputs from the DC Controller (10/11)

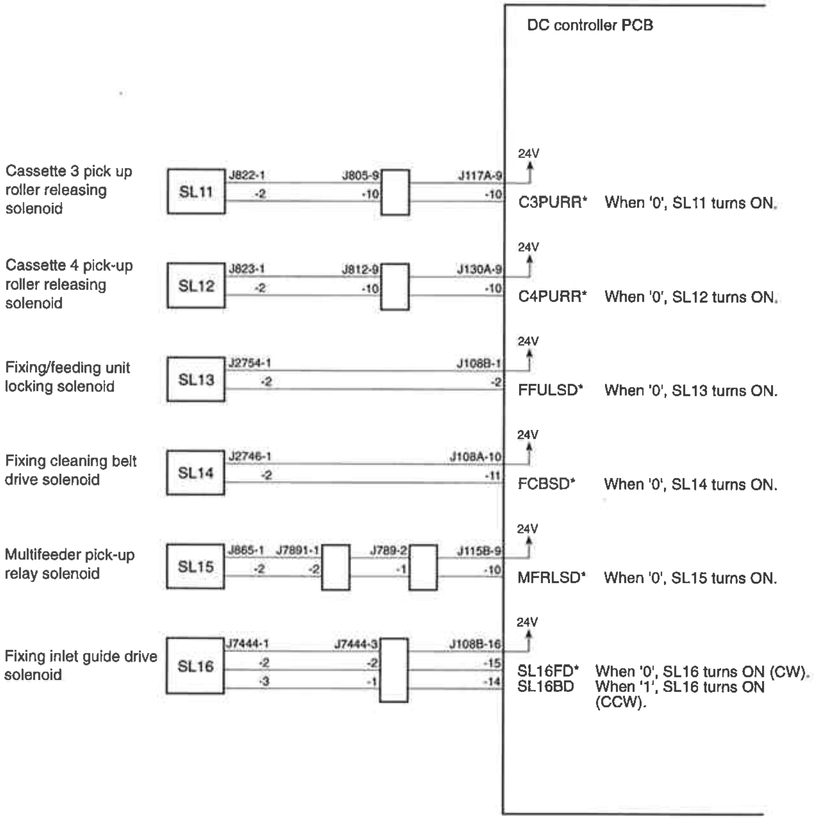

DC controller PCB
Cassette 3 pick up roller releasing solenoid
SL11
J822-1
-2
J805-9
-10
J117A-9
-10
24V
C3PURR*
When '0', SL11 turns ON.
Cassette 4 pick-up roller releasing solenoid
SL12
J823-1
-2
J812-9
-10
J130A-9
-10
24V
C4PURR*
When '0', SL12 turns ON.
Fixing/feeding unit locking solenoid
SL13
J2754-1
-2
J108B-1
-2
24V
FFULSD*
When '0', SL13 turns ON.
Fixing cleaning belt drive solenoid
SL14
J2746-1
-2
J108A-10
-11
24V
FCBSD*
When '0', SL14 turns ON.
Multifeeder pick-up relay solenoid
SL15
J865-1
-2
J7891-1
-2
J789-2
-1
J115B-9
-10
24V
MFRLSD*
When '0', SL15 turns ON.
Fixing inlet guide drive solenoid
SL16
J7444-1
-2
-3
J7444-3
-2
-1
J108B-16
-15
-14
24V
SL16FD*
SL16BD
When '0', SL16 turns ON (CW).
When '1', SL16 turns ON (CCW).

Figure 2-125

Outputs from the DC Controller (11/11)

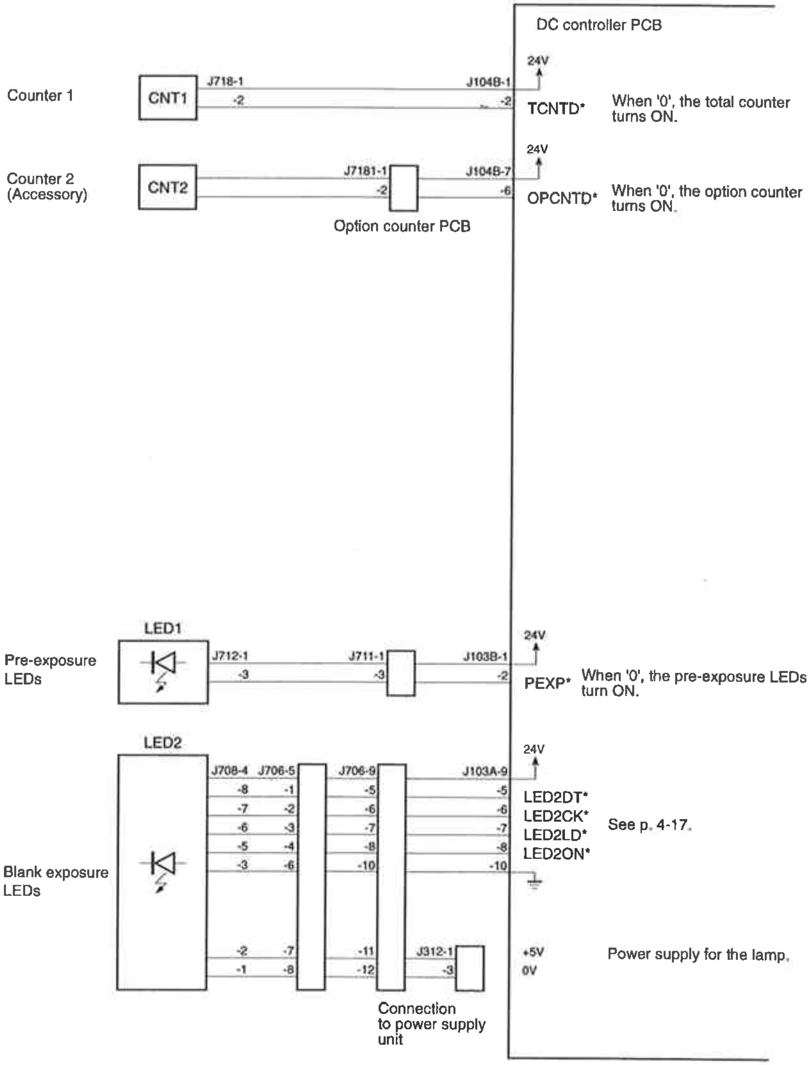

DC controller PCB
Counter 1
CNT1
J718-1
-2
J104B-1
-2
24V
TCNTD*
When '0', the total counter turns ON.
Counter 2 (Accessory)
CNT2
J7181-1
-2
J104B-7
-6
24V
OPCNTD*
When '0', the option counter turns ON.
Option counter PCB
LED1
Pre-exposure LEDs
J712-1
-3
J711-1
-3
J103B-1
-2
24V
PEXP*
When '0', the pre-exposure LEDs turn ON.
LED2
Blank exposure LEDs
J708-4
-8
-7
-6
-5
-3
-2
-1
J706-5
-1
-2
-3
-4
-6
-7
-8
J706-9
-5
-6
-7
-8
-10
-11
-12
J103A-9
-5
-6
-7
-8
-10
24V
LED2DT*
LED2CK*
LED2LD*
LED2ON*
See p. 4-17.
J312-1
-3
+5V
0V
Power supply for the lamp.
Connection to power supply unit

Figure 2-126

G. Inputs to and Outputs from the Options (1/1)

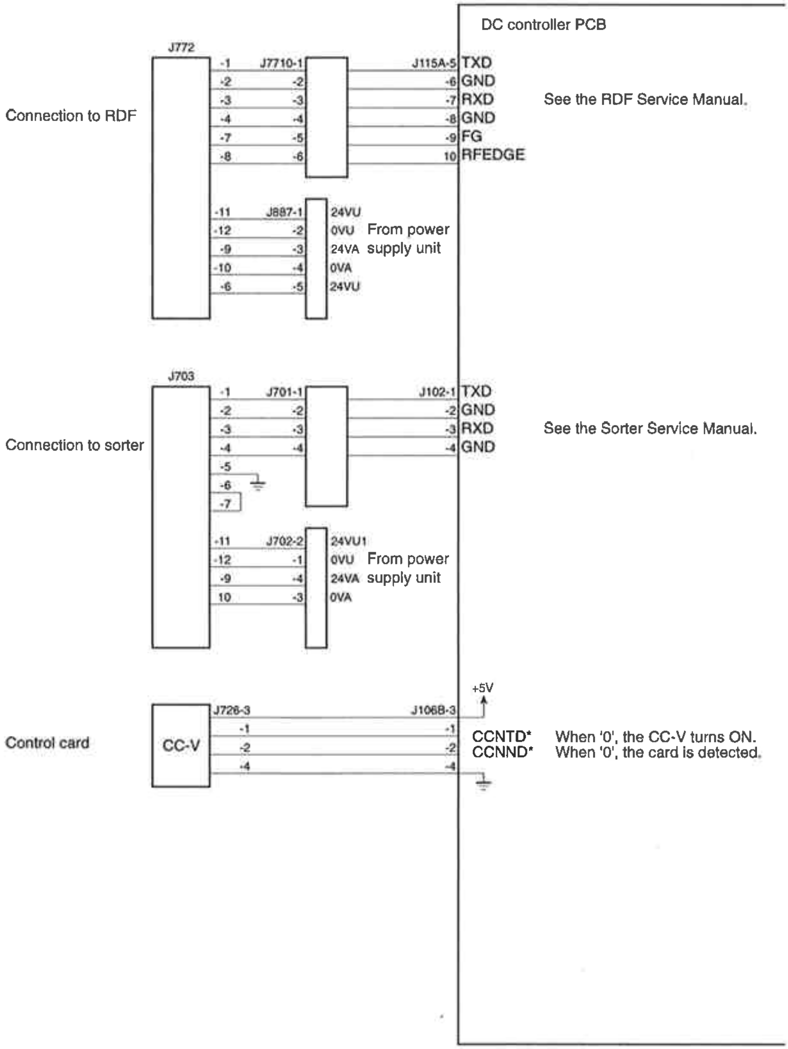

DC controller PCB
Connection to RDF
J772
-1
-2
-3
-4
-7
-8
J7710-1
-2
-3
-4
-5
-6
J115A-5 TXD
-6 GND
-7 RXD
-8 GND
-9 FG
10 RFEDGE
See the RDF Service Manual.
-11
-12
-9
-10
-6
J887-1
-2
-3
-4
-5
24VU
0VU
24VA
0VA
24VU
From power supply unit
Connection to sorter
J703
-1
-2
-3
-4
-5
-6
-7
J701-1
-2
-3
-4
J102-1 TXD
-2 GND
-3 RXD
-4 GND
See the Sorter Service Manual.
-11
-12
-9
10
J702-2
-1
-4
-3
24VU1
0VU
24VA
0VA
From power supply unit
Control card
CC-V
J726-3
-1
-2
-4
J106B-3
-1
-2
-4
+5V
CCNTD*
CCNND*
When '0', the CC-V turns ON.
When '0', the card is detected.

Figure 2-127

CHAPTER 3

EXPOSURE SYSTEM

This chapter discusses the principles of operation used for the copier's lens drive unit and scanner drive unit. It also explains the timing at which these drive units are operated, and shows how they may be disassembled/assembled and adjusted.

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  A. Moving the Lens 3-2
III. SCANNER DRIVE MECHANISM 3-6
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IV. OTHERS...3-13
  A. Detecting the Size of Originals......3-13
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  B. Lens Drive Assembly......................3-25

I. BASIC OPERATIONS

A. Varying the Reproduction Ratio

The reproduction ratio in the axial direction of the drum is varied by the lens drive system, and the reproduction ratio in the drum peripheral direction is varied by the scanner drive system and the main drive system.

The lens drive system uses a zoom lens; as shown in Figure 3-101, the position of the lens and the focal distance are changed to vary the reproduction ratio in the axial direction of the drum.

The scanner drive system moves the No. 1 mirror relatively faster (reduction) or slower (enlargement) than the peripheral speed of the drum to vary the reproduction ratio in the peripheral direction of the drum.

Reference:

In Direct mode, the relative speed of the No. 1 mirror and the peripheral speed of the drum are the same.

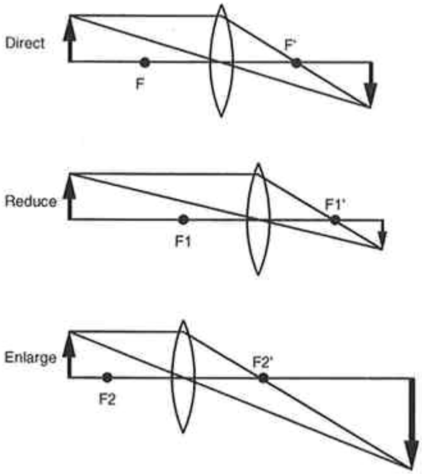


Figure 3-101

II. LENS DRIVE MECHANISM

A. Moving the Lens

1. Outline

The copier picks up and feeds copy paper using center reference; originals, on the other hand, are placed using rear reference when the copyboard cover is used.

As such, the lens is moved in Y direction (vertical) to suit the width of copy paper even in Direct mode.

- Using the Copyboard

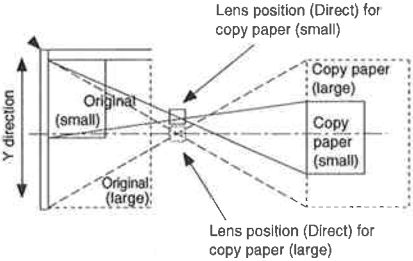

Lens position (Direct) for copy paper (small)
Y direction
Original (small)
Original (large)
Copy paper (large)
Copy paper (small)
Lens position (Direct) for copy paper (large)

Figure 3-201 (top view)

The RDF installed to the copier uses center reference; for this reason, the lens is not moved in Y direction (vertical) as long as the original and the copy paper are of the same size and copies are made in Direct (Figure 3-202). However, if the size of the original and the size of the copy paper are different, the lens is moved in Y direction (vertical) so that the images on the copies will be processed in the same way as when using the copyboard cover.

- With RDF in Use

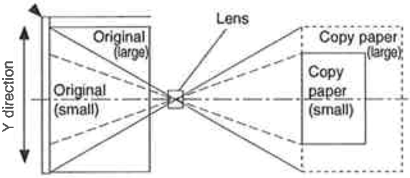

Lens
Y direction
Original (large)
Original (small)
Copy paper (large)
Copy paper (small)

Figure 3-202 (top view)

2. Moving the Lens

a. Moving the Lens in Y Direction (vertical)

The copier's lens is installed to a mobile lens stage which moves in Y direction (vertical) by the rotation of the lens Y motor (M5).

b. Moving the Lens in X Direction (horizontal)

The lens is moved in X direction (horizontal) by the rotation of the lens X motor (M4) installed to the back of the lens stage.

3. Controlling the Lens Motors

Both lens X motor (M4) and lens Y motor (M5) are 4-phase stepping motors. (Both motors are controlled in the same way, and the descriptions that follow are on the lens X motor.)

The motor is controlled by four motor drive signals (M4A, M4A*, M4B, M4B*) generated by the DC controller PCB. Changing the output timing of these motor drive signals, the direction in which the lens X motor rotates is changed.

While the lens X motor remains at rest, the lens X motor hold signal (X-HOLD) is generated, thereby applying the brakes using a voltage lower than the voltage used to rotate the motor.

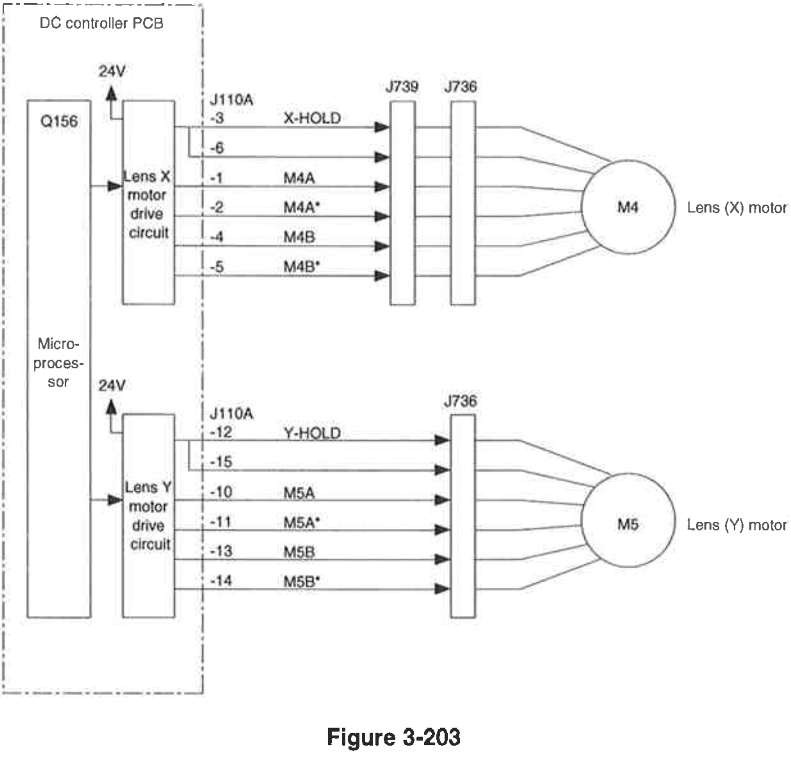

DC controller PCB
24V
Q156
Lens X motor drive circuit
J110A
-3
X-HOLD
-6
-1
M4A
-2
M4A*
-4
M4B
-5
M4B*
J739
J736
M4
Lens (X) motor
Micro-proces-sor
24V
Lens Y motor drive circuit
J110A
-12
Y-HOLD
-15
-10
M5A
-11
M5A*
-13
M5B
-14
M5B*
J736
M5
Lens (Y) motor

Figure 3-203

4. Moving the Lens

a. At Power-On

When the power switch is turned ON, the lens X motor (M4) rotates, thereby moving the lens in the direction of the lens X home position sensor (PS6).

Then, the lens Y motor (M5) rotates to move the lens in the direction of the lens Y home position sensor (PS7).

When the signal plate on the lens housing blocks the lens X home position sensor (PS6), the X motor starts to rotate in reverse; when the signal plate on the lens stage blocks the lens Y home position sensor (PS7), the lens Y motor (M5) starts to rotate in reverse.

Each motor stops when the lens reaches Direct position (A4 copy paper width). (See period I in Figure 3-204.)

b. While Making Copies

The microprocessor slave (Q140) remembers the position of the lens representing Direct mode (A4 copying). When the ratio changes, it sends drive pulses to the lens X motor (M4)/Y motor (M5) immediately to change the position of the lens accordingly. (See period II in Figure 3-204.)

The lens Y motor (M5) starts to move after the original size and the copy paper size have been determined in response to a press on the Copy Start key. (See period III in Figure 3-204.)

- Sequence of Operations Used to Move the Lens

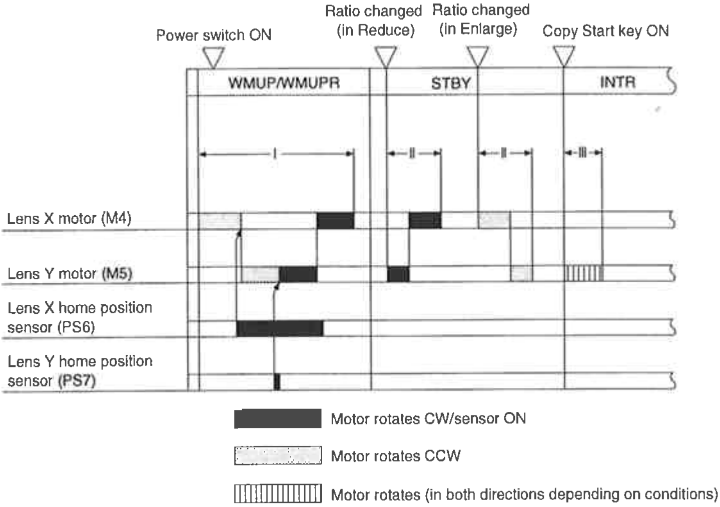

Power switch ON
Ratio changed (in Reduce)
Ratio changed (in Enlarge)
Copy Start key ON
WMUP/WMUPR
STBY
INTR
I
II
II
III
Lens X motor (M4)
Lens Y motor (M5)
Lens X home position sensor (PS6)
Lens Y home position sensor (PS7)
Motor rotates CW/sensor ON
Motor rotates CCW
Motor rotates (in both directions depending on conditions)

Figure 3-204

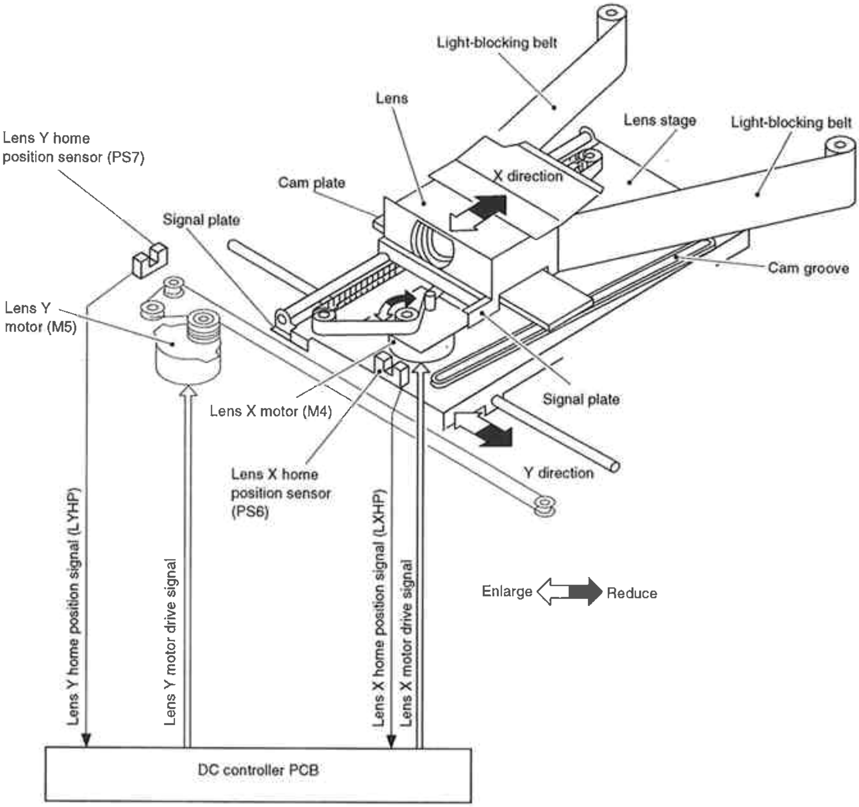

Light-blocking belt
Lens
Lens stage
Light-blocking belt
Lens Y home position sensor (PS7)
X direction
Cam plate
Signal plate
Cam groove
Lens Y motor (M5)
Signal plate
Lens X motor (M4)
Lens X home position sensor (PS6)
Y direction
Lens Y home position signal (LYHP)
Lens Y motor drive signal
Lens X home position signal (LXHP)
Lens X motor drive signal
Enlarge
Reduce
DC controller PCB

Figure 3-205

III. SCANNER DRIVE MECHANISM

A. Driving the Scanner

1. Outline

The scanner is moved forward and in reverse by changing the direction in which the scanner motor (M3) rotates.

The speed at which the scanner motor rotates when the scanner moves forward varies according to the selected reproduction ratio.

The speed at which the scanner motor rotates when the scanner moves in reverse remains the same regardless of the selected reproduction ratio; it is 2.9 times the speed at which the motor rotates when the scanner moves forward in Direct.

The brakes are applied to the scanner as soon as the signal plate reaches the scanner original leading edge 1 sensor (PS3) to slow down the scanner; the brakes are applied once again when the signal plate reaches the scanner home position sensor (PS1), thereby stopping the scanner at home position.

The distance over which the scanner moves varies according to the copy size and the reproduction ratio.

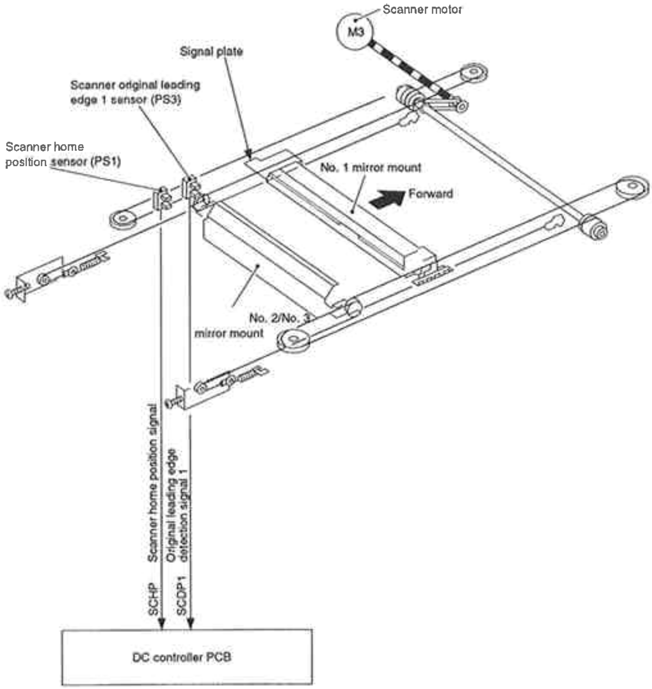

Scanner motor
M3
Signal plate
Scanner original leading edge 1 sensor (PS3)
Scanner home position sensor (PS1)
No. 1 mirror mount
Forward
No. 2/No. 3 mirror mount
SCHP Scanner home position signal
SCDP1 Original leading edge detection signal 1
DC controller PCB

Figure 3-301

2. Relationship between Scanner Sensor and Signals

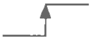
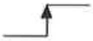
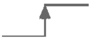
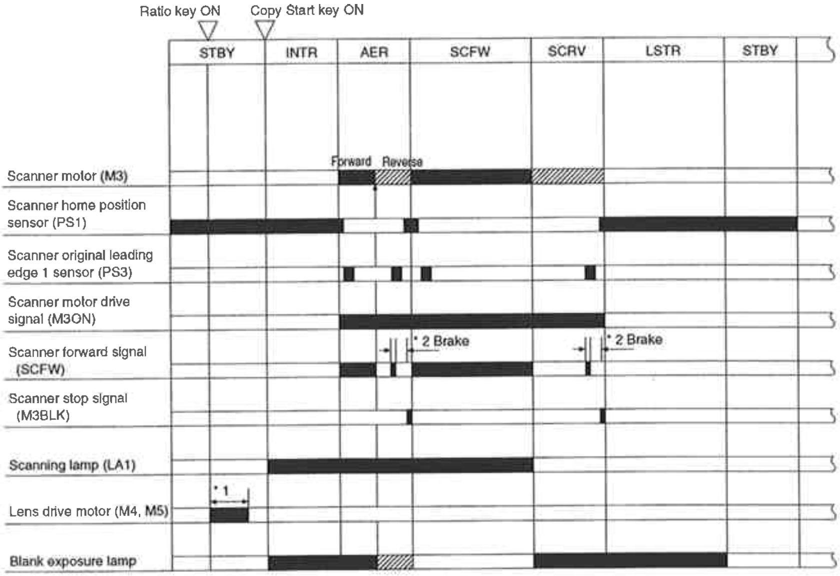
Scanner sensor	Signal	Scanner		Description
		Forward	Reverse	
Scanner home position sensor (PS1)	SCHP			• The scanner is at home position.
				• The scanner has reached home position.
Original detection leading edge 1 sensor (PS3)	SCDP1			• The registration clutch turns ON. • The scanner is checked against reference travel distance.
				• The brakes are applied to the scanner to slow down.

Table 3-301

3. Basic Sequence of Operations for Scanner Movement

The distance over which the scanner moves forward is determined by the microprocessor in relation to the copy paper size and the reproduction ratio as well as copying mode.

The microprocessor computes the dimensions of an original that can be copied to the selected copy paper size and reproduction ratio to determine the distance over which the scanner travels forward.

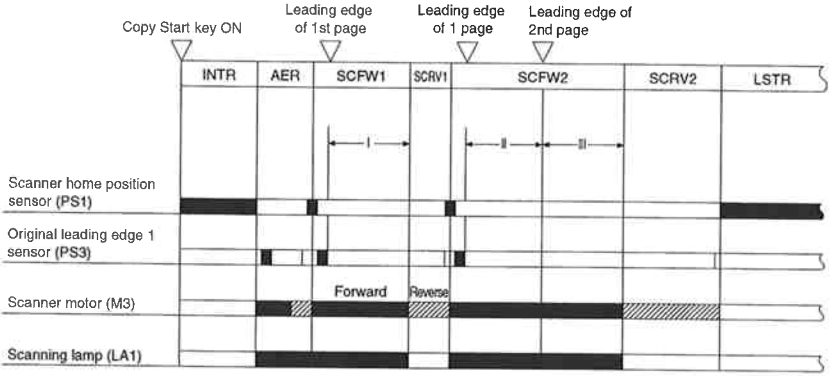

Ratio key ON
Copy Start key ON
STBY
INTR
AER
SCFW
SCRV
LSTR
STBY
Forward
Reverse
Scanner motor (M3)
Scanner home position sensor (PS1)
Scanner original leading edge 1 sensor (PS3)
Scanner motor drive signal (M3ON)
Scanner forward signal (SCFW)
* 2 Brake
* 2 Brake
Scanner stop signal (M3BLK)
Scanning lamp (LA1)
*1
Lens drive motor (M4, M5)
Blank exposure lamp

* 1 :The lens is moved to suit the selected reproduction ratio and copy paper size.

* 2 :The degree of braking may be varied in service mode (*3*).

Figure 3-302

4. Sequence of Operations for Scanner Movement (page separation)


Copy Start key ON
Leading edge of 1st page
Leading edge of 1 page
Leading edge of 2nd page
INTR
AER
SCFW1
SCRV1
SCFW2
SCRV2
LSTR
I
II
III
Scanner home position sensor (PS1)
Original leading edge 1 sensor (PS3)
Forward
Reverse
Scanner motor (M3)
Scanning lamp (LA1)

I, II, and III in Figure 3-303 are all controlled by the microprocessor on the DC controller PCB with reference to the original leading edge detection signal 1 (falling edge of SCDP1).

The microprocessor determines the distance over which the scanner moves forward in relation to the reproduction ratio, original size, or the size of the selected cassette.

I, II: The distance over which the scanner moves forward is determined in relation to the reproduction ratio and the original size or the size of the selected cassette.

III: If original size detection is executed, the microprocessor assumes the value obtained by dividing the detected original size as the center and, therefore, as the leading edge of the second page.

Control will be with reference to the size of the selected cassette for copying in page separation without detecting the size of the original.

If II shown in Figure 3-303 exceeds 220 mm, 220 mm (approximate) will be used as the leading edge of the second page.

If the order of making copies (first page and second page) is reversed in special features mode (Chapter 1), the operations will be the same except that the order of SCFW2/SCRV2 and SCFW1/SCRV1 is reversed.

Figure 3-303

Reference:

If two or more modes are selected, the scanner is controlled using the lowest value that has been obtained by reading the size of the original.

The microprocessor exerts control with reference to the size of the original when the following modes are selected:

Mode	Reference original size
• RDF in use	Original size detected by the feeder
• Original frame erasing mode	Original size set by the user

Table 3-302

5. Scanner Motor (M3) Control Circuit

a. Outline

Figure 3-304 shows the circuit that controls the scanner motor, and the circuit has the following functions:

① Turning on and off the scanner motor.
② Controlling the rotation direction of the scanner motor.
③ Controlling the rotation of the scanner motor to a specific speed.

b. Stopping the Motor

When the scanner motor drive control signal (M3ON) goes '0', the drive circuit turns OFF and the motor remains stationary.

c. Controlling the Forward Movement of the Scanner

When the scanner motor drive control signal (M3ON) goes '1' and the scanner forward signal (M3F/R) goes '0', the drive signal turns ON and the scanner motor rotates clockwise, thereby moving the scanner forward.

d. Controlling the Reverse Movement of the Scanner

When the scanner motor drive signal (M3ON) goes '1' and the scanner forward signal (M3F/R) goes '1', the drive circuit turns ON, thereby moving the scanner motor counterclockwise.

e. Controlling the Rotation of the Scanner Motor to a Specific Speed

The microprocessor on the DC controller PCB generates the scanner speed signal (M3FS) to the scanner motor driver PCB according to the selected reproduction ratio.

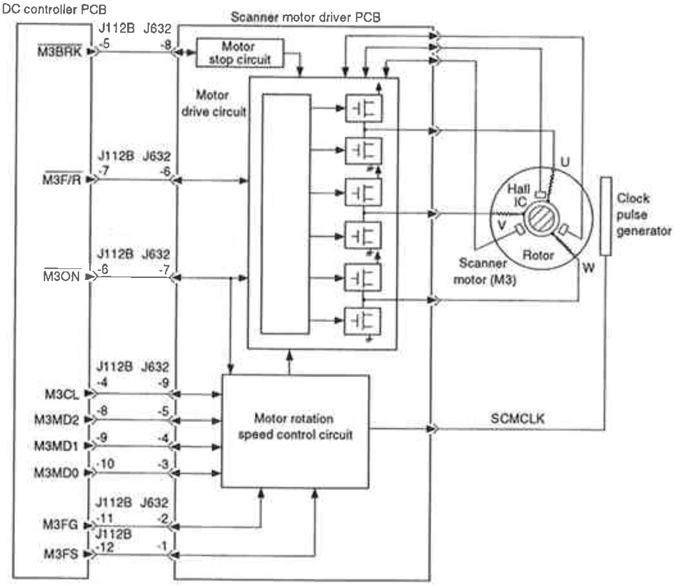

DC controller PCB
Scanner motor driver PCB
J112B J632
$\overline{M3BRK}$
-5
-8
Motor stop circuit
Motor drive circuit
J112B J632
$\overline{M3F/R}$
-7
-6
J112B J632
$\overline{M3ON}$
-6
-7
J112B J632
M3CL
-4
-9
M3MD2
-8
-5
M3MD1
-9
-4
M3MD0
-10
-3
Motor rotation speed control circuit
J112B J632
M3FG
-11
-2
J112B
M3FS
-12
-1
U
Hall IC
V
Rotor
W
Scanner motor (M3)
Clock pulse generator
SCMCLK

Figure 3-304

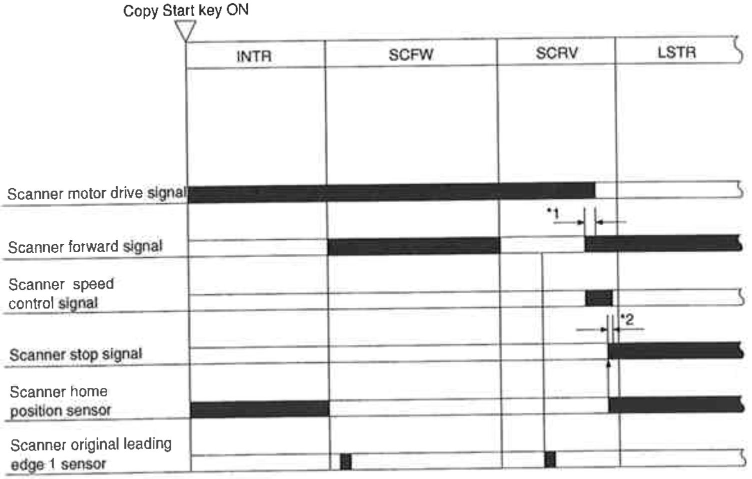
The rotation speed control circuit compares the scanner speed signal and the clock pulse (SCMCLK) generated by the scanner motor and sends control signals to the motor drive circuit according to the difference.

The motor drive circuit does not change the voltage applied to the motor but rather turns ON and OFF the power to the motor at short intervals to control the speed of rotation. (The voltage is maintained constant, but the ON/OFF periods are varied.)

Since the rotation speed of the scanner motor must be varied to suit the selected reproduction ratio, the reproduction ratio selection signal (M3MD0, 1, 2) is generated by the DC controller PCB as shown in Table 3-303.

M3MD2	M3MD1	M3MD0	One-sidey copy
0	0	0	204~172
0	0	1	171~144
0	1	0	143~120
0	1	1	119~100
1	0	0	99~79
1	0	1	78~62
1	1	0	61~49
1	1	1	Scanner reverse movement

Table 3-303


Copy Start key ON
INTR
SCFW
SCRV
LSTR
Scanner motor drive signal
*1
Scanner forward signal
Scanner speed control signal
*2
Scanner stop signal
Scanner home position sensor
Scanner original leading edge 1 sensor

*1:Scanner slow-down braking.
*2:Scanner stop braking.

Figure 3-305

IV. OTHERS

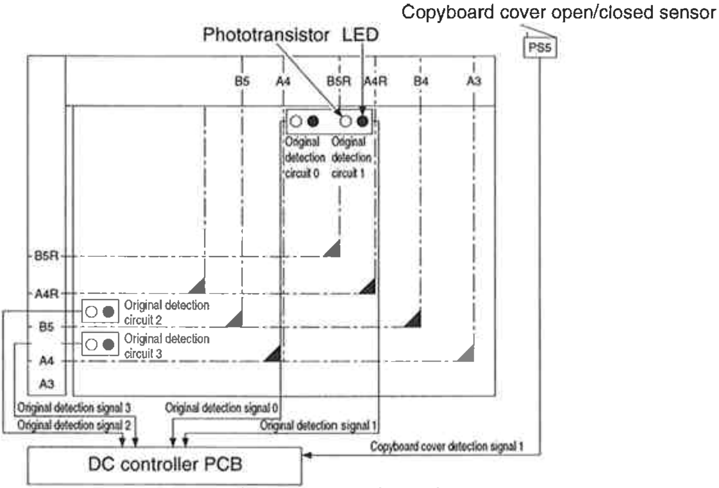
A. Detecting the Size of Originals

1. Outline

The copier is provided with an auto paper selection function and an auto reproduction ratio selection function, which require identification of the size of originals.

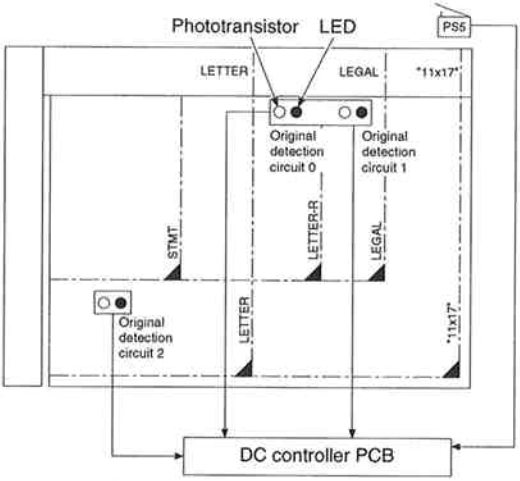
As many as four original detection circuits are located under the copyboard glass (Figure 3-401), and the outputs of these sensors are measured by the DC controller when the copyboard cover is closed, identifying the size of the original on the copyboard as being A3, B4, A4, or B5.

Each of the original detection circuit uses a LED to emit light and a phototransistor to detect the light reflected by the original for output to the DC controller.


Copyboard cover open/closed sensor
Phototransistor
LED
PS5
B5
A4
B5R
A4R
B4
A3
Original detection circuit 0
Original detection circuit 1
B5R
A4R
B5
A4
A3
Original detection circuit 2
Original detection circuit 3
Original detection signal 3
Original detection signal 2
Original detection signal 0
Original detection signal 1
Copyboard cover detection signal 1
DC controller PCB

AB size (European specification)

Figure 3-401a

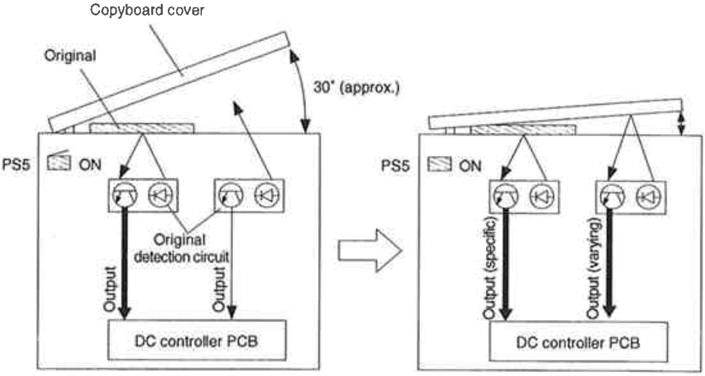

Phototransistor
LED
PS5
LETTER
LEGAL
11x17
Original detection circuit 0
Original detection circuit 1
STMT
LETTER-R
LEGAL
Original detection circuit 2
LETTER
11x17
DC controller PCB

INCH size (North American specification)

Figure 3-401b

2. Operation

The DC controller measures the outputs of the original detection circuits for 15 sec after the closing copyboard cover turns on the copyboard cover open/closed sensor (PS5) or at intervals of 0.2 sec until the Copy Start key is pressed.


Copyboard cover
Original
30° (approx.)
PS5
ON
Original detection circuit
Output
Output
DC controller PCB
PS5
ON
Output (specific)
Output (varying)
DC controller PCB

(The thickness of the arrows indicating outputs represents the size of the level.)

Figure 3-402

If an original is over a sensor, the light reflected by the original is received by the original detection circuit so that the output of the detection circuit is specific regardless of the angle of the copyboard cover.

If no original is over the sensor, on the other hand, the output immediately after PS5 turns on is small. The output increases thereafter when the copyboard cover is fully closed, since the detection circuit will receive the light reflected by the copyboard cover sheet.

As such, the DC controller assumes the presence of an original at each point if the output of the detection circuit remains unchanged and assumes the absence of an original in response to a change in the output.

This type of detection enables identification of the size of a black original as well.

Reference:

1. If the original is thick and the copyboard cover cannot be closed fully even after PS5 has turned ON, the output level of the sensor will not change. As such, if no change occurs in the output levels of three sensors, the DC controller will compare the measurements taken as soon as PS5 turns ON against the slice level to identify the size of the original.
2. If the copyboard cover is open, i.e., PS5 is OFF, the cassette containing paper of the largest size will be selected of all the cassettes set in the copier.

3. Sizes of Originals

The DC controller identifies the size of originals based on specific combinations of original detection signals (DSITE0 through 3) as follows:

a. AB Configuration

Original detection signal				Size
DS3	DS2	DS1		
Sensor 3	Sensor 2	Sensor 1	Sensor 0	AB
0	0	0	0	None or A5, A5R
0	0	0	1	B5R
0	1	0	0	B5
1	1	0	0	A4
0	0	1	1	A4R
0	1	1	1	B4
1	1	1	1	A3

Table 3-401

b. Inch Configuration

Original detection signal			Size
DS2	DS1		
Sensor 2	Sensor 1	Sensor 0	Inch
0	0	0	None
0	0	1	LTRR
0	1	1	LGR
1	0	0	LTR
1	1	1	11" × 17"

Table 3-402

V. DISASSEMBLY AND ASSEMBLY

This section explains mechanical characteristics and describes how to disassemble/assemble the machine.

Be sure to observe the following whenever disassembling/assembling the machine:

1. ⚠ Disconnect the power plug before starting the work.
2. Unless otherwise shown, assemble the parts by reversing the steps given to disassemble them.
3. Identify each screw by type (length, diameter) and location.
4. A washer is used for one of the mounting screws on the rear cover to protect against static electricity; be sure to use the washer when assembling the part.
5. A washer is used for some mounting screws (for grounding wire, varistor) to ensure correct electrical continuity; be sure to use the washer when assembling the part.
6. As a rule, do not operate the machine while any of its parts are removed.
7. When sliding out the duplexing unit or the fixing assembly, be sure to turn off the front door switch or the power switch.

A. Scanner Drive System

1. Removing the Scanner Drive Assembly Motor

1) Remove the RDF/copyboard plate.
2) Remove the copier's rear cover.
3) Remove the three mounting screws, and remove the RDF/copyboard cover.

Caution:
The mounting screws used for the RDF/copyboard cover are longer than other mounting screws.

4) Remove the upper rear cover.
5) Remove the right rear cover.
6) Remove the multifeeder assembly.
7) Remove the five mounting screws ①, and disconnect the two connectors ②; then, remove the RDF rear right mount ③.

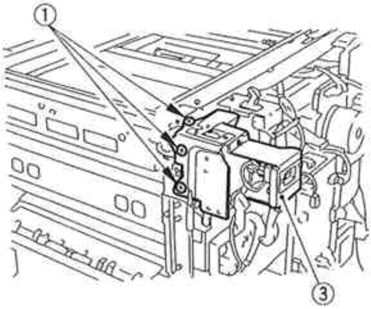


Figure 3-501

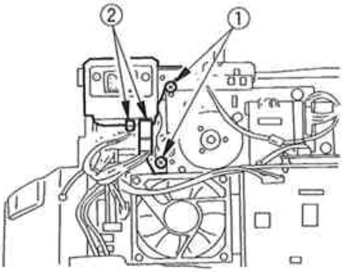


Figure 3-502

8) Remove the mounting screw ④, and remove the RDF detecting assembly ⑤.

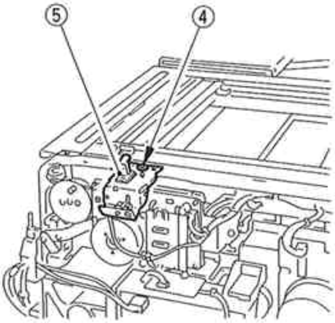


Figure 3-503

9) Remove the three mounting screws ⑥, and disconnect the two connectors ⑦; then, remove the scanner drive motor ⑧.

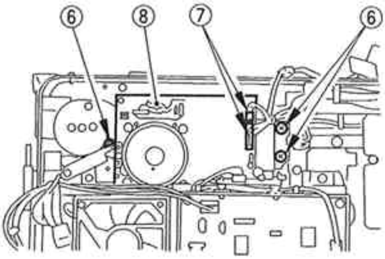


Figure 3-504

Caution:
The gear on the motor shaft is in contact with the drive belt; remove the motor while detaching the belt from the gear.

Caution:
When removing the scanner drive motor, be sure to mark the end of the motor assembly with a scriber for positioning later.
The scanner drive motor assembly is fixed in position using a special jig so that the tension on the belt of the motor assembly is within a specific range of values.

2. Outline of the Scanner Drive Cable

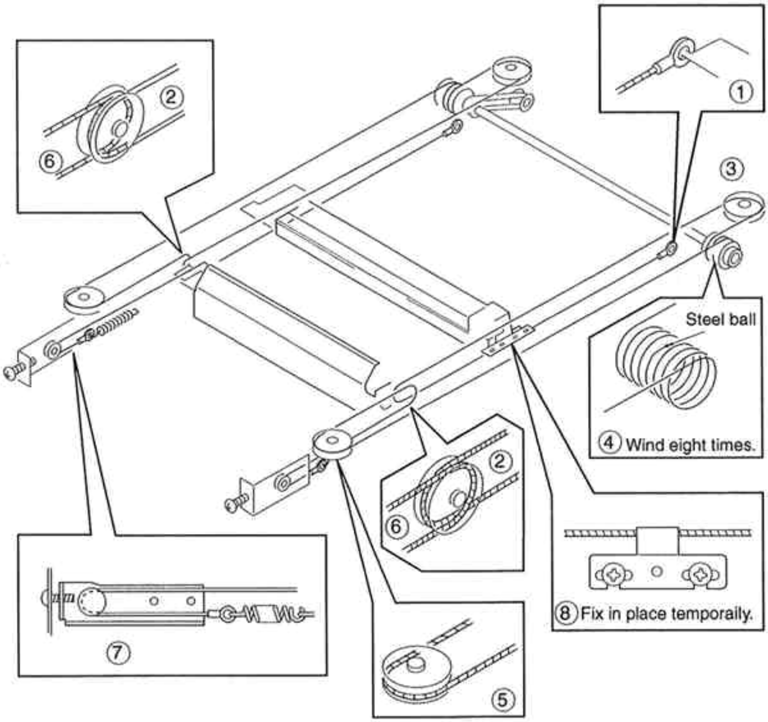

②
⑥
①
③
Steel ball
④ Wind eight times.
②
⑥
⑧ Fix in place temporarily.
⑦
⑤

Figure 3-505

3. Removing the Scanner Drive Cable

1) Remove the upper right cover, left cover, rear cover, and upper rear cover.
2) Remove the copyboard glass.
3) Remove the control panel.
4) Remove the RDF rear right mount. (See p. 3-17.)
5) Remove the two mounting screws ①, and remove the scanner locking disk ②.

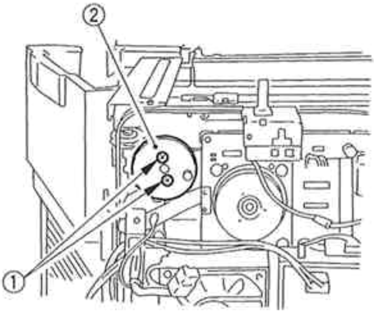


Figure 3-506

6) Disconnect the three connectors from the potential control PCB and the connector for the service switch.
7) Remove the five mounting screws ③, and disconnect the connector ④; then, remove the cooling fan ⑤.

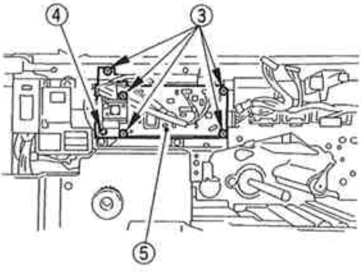


Figure 3-507

8) Remove the two cable fixing screws (rear) ⑥ from the No. 1 mirror mount.

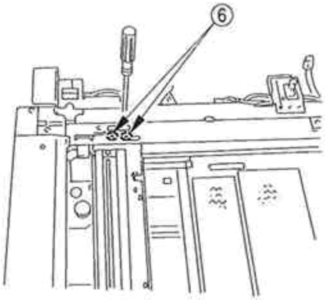


Figure 3-508

9) Remove the two cable fixing screws (front) ⑦ from the No. 1 mirror mount.

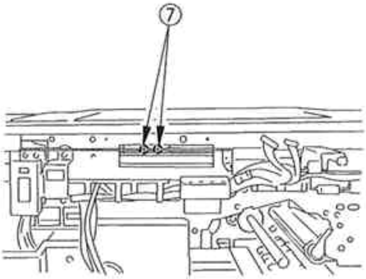


Figure 3-509

10) Loosen the tension screws ⑧, and loosen the scanner cable.

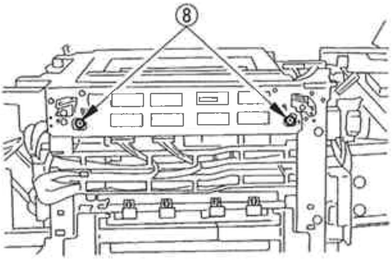


Figure 3-510a

11) Remove the scanner cable.

4. Adjusting the Tension of the Scanner Drive System

When you have installed the scanner drive cable, be sure to perform the following steps to adjust the tension on the cable:

1) Remove the five mounting screws, and remove the upper left cover.
2) Loosen the fixing screw on the tension spring bracket.
3) Turn the tension adjusting screw so that the value is as indicated below.
   - Turn the tension adjusting screw A so that the reading on the spring gauge is 200 ±50g when the center of the scanner cable is pulled about 10 mm.

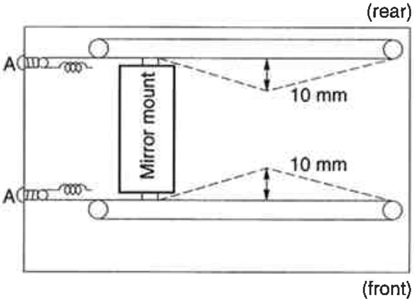


Figure 3-510b

5. Positioning the Mirror

When you have installed the scanner drive cable, be sure to perform the following steps to adjust the mirror position:

1) Move the No. 1 mirror mount and the No. 2/No. 3 mirror mount to the left.
2) Set the mirror positioning tool (front, rear; FY9-3011) as indicated.

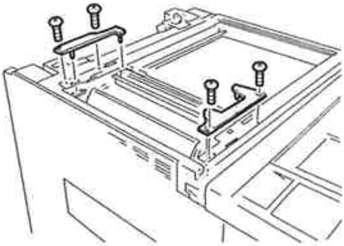


Figure 3-511

3) Tighten the two screws on the clamp used to fix the scanner drive cable to the No. 1 mirror mount.

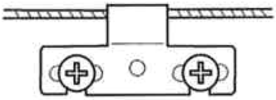


Figure 3-512

4) Remove the tool.

6. Adjusting the Position of the Scanner

After making copies, remove the control panel, and check to make sure that the line A of the electrode, i.e., the front of the No. 1 mirror mount, matches B of the hole in the glass support (front).

Otherwise, change the setting of 'BRAKE_SC' in service mode (*3*) so that the line of A matches B.

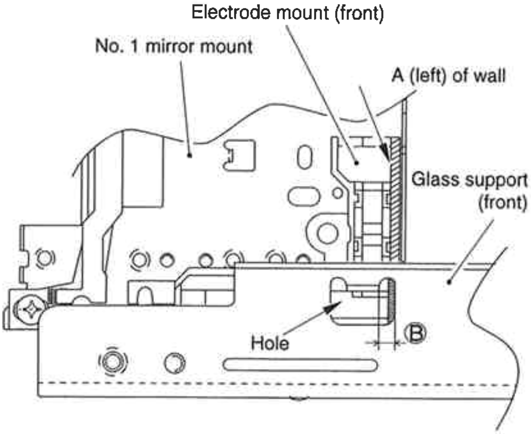

Electrode mount (front)
No. 1 mirror mount
A (left) of wall
Glass support (front)
Hole
Ⓑ

Figure 3-513

B. Lens Drive Assembly

Take note of the following when handling the zoom lens or the lens stage drive motor; the gear of the output shaft may become damaged if you turn on the power without removing the lens fixing or if you move the lens or the lens stage without disconnecting the power plug.

① At the time of installation of the machine, be sure to remove the lens fixing from the lens stage before connecting the power plug.

② Be sure to disconnect the power plug before moving the lens stage or the zoom lens by hand.
In addition, be sure to hold a section where it engages with the rail to avoid abrupt movement.

1. Removing the Lens Y Direction Drive Motor

1) Remove the copyboard glass retainer, and remove the copyboard glass.
2) Move the No. 1 mirror mount to the left.
3) Remove the three mounting screws ①, and remove the lens hood ②.

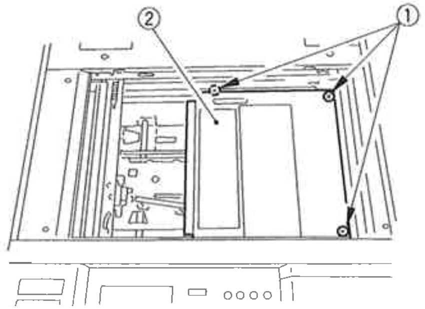


Figure 3-514

Caution:

When installing the lens hood, fit the bosses on the lens hood into the the rail at the front; then, engage the hook at the rear while turning the lens hood to the right.

4) Remove the two cable mounting screws ③, and remove the two mounting screws ④; then, lift the lens Y direction drive motor together with its support ⑤.

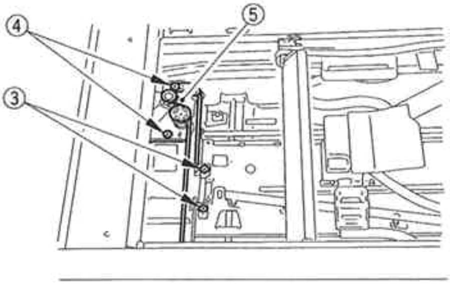


Figure 3-515

5) Disconnect the connector ⑥, and remove the two mounting screws ⑦; then, remove the lens Y direction drive motor ⑧.

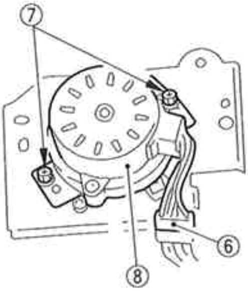


Figure 3-516

2. Removing the Lens Stage Temporarily

1) Remove the copyboard cover.
2) Move the No. 1 mirror mount to the left of the scanner rail.

Caution:
Be sure to push the center of the No. 1 mirror mount.

3) Remove the lens hood.
4) Remove the Y direction cable clamp, and fix the end of the Y direction cable in place temporarily.
5) Remove the mounting screw ①, and remove the light-blocking plate ② (on the lens mount).

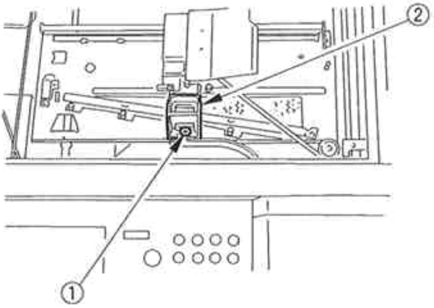


Figure 3-517

6) Remove the mounting screw ③, and remove the light-blocking belt 2 (front) ④ together with its holder. (Tape the light-blocking belt you have removed in place on the lens stage.)

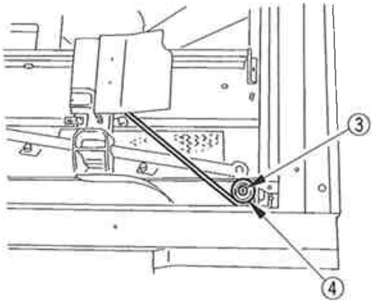


Figure 3-518

7) Lift the lens stage ⑤, and remove the bushing ⑥ from the rail ⑦.

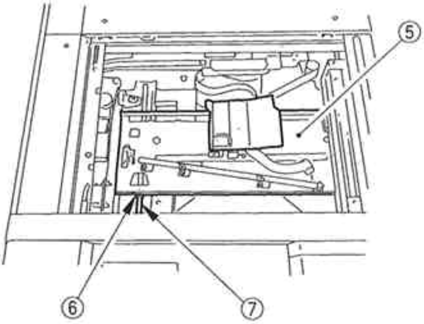


Figure 3-519

3. Installing the Light-Blocking Belt

1) Take up the light-blocking sheet ② on the bobbin ①, thereby removing the slack; then, turn the bobbin mount ③ two to three times to the right, fit the boss on the bottom of the bobbin mount into the hole in the belt mount ④ to set the bobbin, and fix it in place with a mounting screw ⑤.

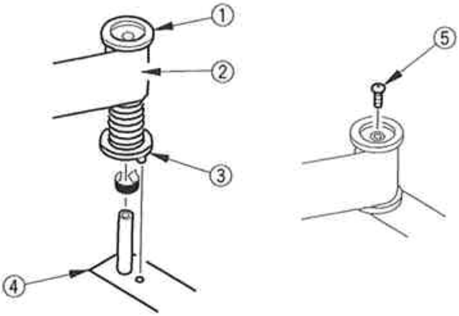


Figure 3-520

4. Removing the Lens X Direction Drive Motor

1) Remove the lens stage.
2) Disconnect the connector ①, and remove the mounting screw ②; then, remove the motor mount ③.

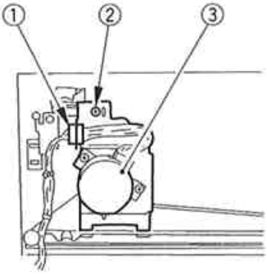


Figure 3-521

3) Remove the two mounting screws ④, and remove the lens X direction drive motor ⑤ from the motor mount.

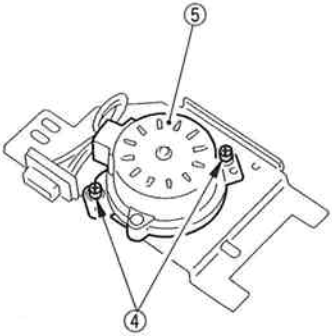


Figure 3-522

5. Attaching the Lens X Direction Drive Belt

Attach the belt with a mounting screw ② when the lens X direction drive motor ① has lowered on its own weight.

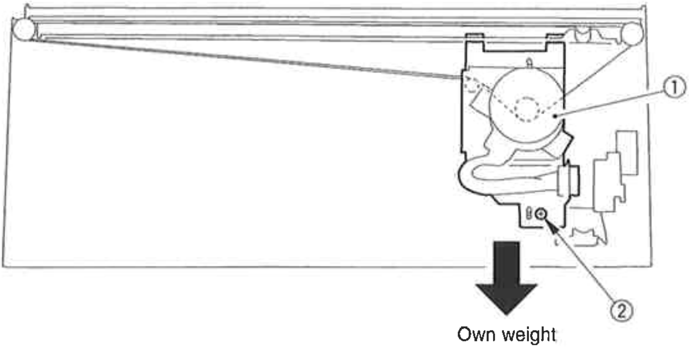
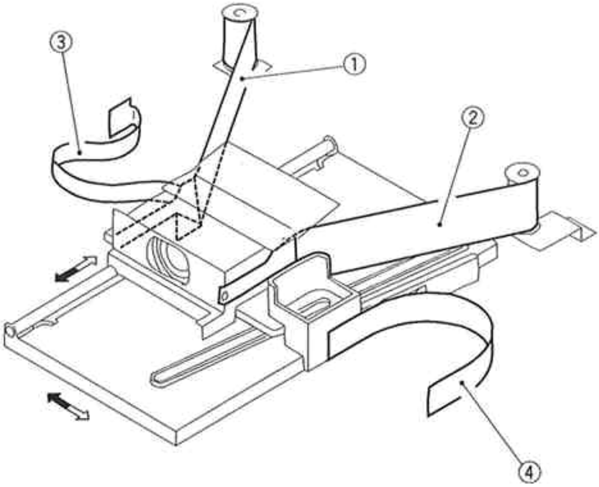


Figure 3-523

6. Attaching the Light-Blocking Belt



① Light-blocking belt 1	③ Light-blocking belt 3
② Light-blocking belt 2	④ Light-blocking belt 4

Figure 3-524

7. When Replacing the Light-Blocking Belt

1) Take up the belt ① on the bobbin ② by turning it clockwise, and tape it in place.

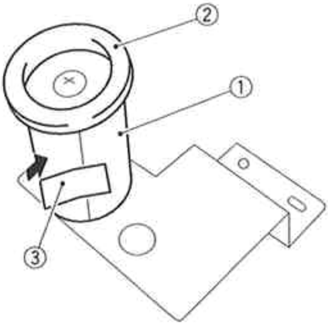


Figure 3-525

2) Fix the light-blocking belt mount in place on the lens mount.
3) Turn the bobbin clockwise and counterclockwise by giving it several half turns; then, release it so that the spring inside the bobbin is free.
4) With the bobbin turned 2 to 2.5 times clockwise, detach the tape, and slide out the end of the belt.
5) Hook the end of the belt on the lens unit.

CHAPTER 4

IMAGE FORMATION SYSTEM

This chapter discusses the principles of how images are formed. It also explains the timing at which the various units involved in image formation are operated, and shows how they may be disassembled/assembled and adjusted.

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I. PROCESSES

A. Controlling the Surface Potential of the Drum

1. Outline

Changes in the latent static images affect the quality of copy images to a very high degree, and such changes can be caused by any of the following:

① changes in the sensitivity of the drum.
② changes in the degree of charging by the primary corona assembly.
③ changes in the degree of exposure.

These changes, in turn, are caused by changes in the site of installation (e.g., temperature, humidity) and deterioration or dirt in some parts.

The machine is equipped with a drum surface potential control mechanism to ensure stable formation of latent static images in the presence of such factors.

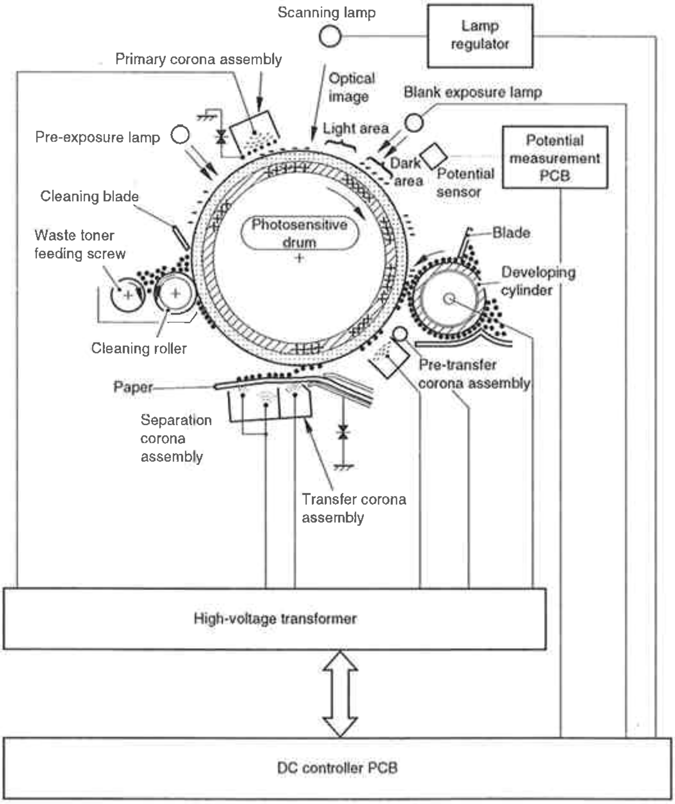

Scanning lamp
Lamp regulator
Primary corona assembly
Optical image
Blank exposure lamp
Light area
Pre-exposure lamp
Dark area
Potential sensor
Potential measurement PCB
Cleaning blade
Photosensitive drum
Waste toner feeding screw
Blade
Developing cylinder
Cleaning roller
Pre-transfer corona assembly
Paper
Separation corona assembly
Transfer corona assembly
High-voltage transformer
DC controller PCB

Figure 4-101

2. Control Method

The copier uses its internal potential sensor to measure the dark area potential (V_D) and the light area potential (V_{L1}) of the drum surface, and uses the data to enable the target value through correction.

In addition, the copier measures the light area potential (V_{L2}) for developing bias in relation to the conditions it used for such correction when determining the DC component of the developing bias.

See Tables 4-101 and -102 for the number of measurement corrections of potential control and the timing of potential control in each mode.

	Corrections	Measurements
V_D	8 (max.)	8 (max.)
V_{L1}	8 (max.)	8 (max.)
V_{L2}	0	1

Table 4-101 Measurement Corrections for Potential Control

Mode	Timing
Text mode	• Once at power-on. • Once during first copying between 10 min an 60 min after power-on. • Once during first copying after 60 min.
Photo mode	• Once during first copying in photo mode after power-on.

Table 4-102 Timing of Potential Control

a. Primary Current Control

To measure the dark area potential (V_D) for the first time after power-on, a reference current (setting stored in ROM) is sent to the primary charging assembly, and the potential sensor is used to measure the drum surface potential.

The DC controller PCB compares the measurements taken of the drum surface potential and the target potential; if the drum surface potential differs from the target value, the primary charging level control signal (HVTPC) generated by the DC controller PCB is corrected.

In this way, the corrected current is applied to the primary charging assembly by the high-voltage transformer (HVT). The subsequent measurements are made using the previously corrected value as the reference current, thereby reducing the first copy time.

Such measurement and correction are repeated as many as eight times so that the dark area potential (V_D) will be as close to the target value as possible. If the potential is not within the allowance after the eighth measurement, the dark area potential will be determined using the eighth correction value.

Note:

If the potential is in excess of the control range of the target value after measuring the potential eight times, the notation '1' will be indicated for 'PLMT' (upper limit flag of the primary current value) in service mode (*1*).

Reference:

Potential control may be disabled by 'POCNT' (display mode; *4*). When done, the primary current value will be 1000 µA in text mode and 800 µA in photo mode.

b. Controlling the Intensity of the Scanning Lamp

To measure the light-area potential for the first time after power-on, the reference ON voltage (setting stored in ROM) is applied to the scanning lamp.

In response, the scanning lamp exposes the standard white plate so that the reflected light is projected to the drum.

The potential of the surface of the drum exposed to the light is measured by the potential sensor, and the data is sent to the DC controller PCB.

The DC controller PCB compares the measurement and the target value; if the measurement differs from the target value, the intensity adjustment signal (LINT) generated by the DC controller is corrected.

The subsequent measurements are taken using the previously corrected value as the reference voltage, thereby reducing the first copy time.

The corrected voltages are applied to the scanning lamp by the lamp regulator.

Such measurement and correction are repeated as many as eight times so that the light area potential (V_{L1}) will be as close to the target value as possible. However, if the measurement does not fall within the allowance after the eighth measurement, the eighth correction value will be used to determine the intensity of the scanning lamp.

Note:
If the measurement is in excess of the control range of the target value after measuring the potential eight times, the notation '1' will be indicated for 'LLMT' (upper limit flag of the lamp ON voltage) in service mode (display mode; *1*).

c. Controlling the Developing Bias

The light area potential (V_{L2}) for the developing bias is based on the measurements taken of the drum surface potential occurring when the scanning lamp is turned ON using the final intensity adjustment signal value obtained during V_{L1} control.

Using the measurement potential, the DC controller PCB controls the developing bias DC level control signal (DEVDC), ultimately controlling the DC bias to be applied to the developing cylinder by the high-voltage transformer.

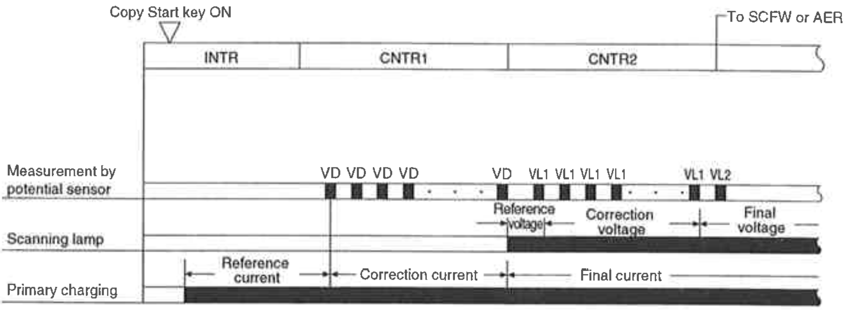

Copy Start key ON
To SCFW or AER
INTR
CNTR1
CNTR2
Measurement by potential sensor
VD VD VD VD
VD VL1 VL1 VL1 VL1
VL1 VL2
Reference voltage
Correction voltage
Final voltage
Scanning lamp
Reference current
Correction current
Final current
Primary charging

Figure 4-102

V_{L2} is determined in the following sequence:

① The lamp is turned ON at 52.1 V, thereby exposing the standard white plate to read the drum potential (V_{L1}).

② The lamp ON voltage is controlled so that V_{L1} is 170 V.

③ The ON voltage for the white background of the original is obtained by adding 5.1 V to the ON voltage of V_{L1}.

As such, the value 5.1 V is the result of converting the difference between the intensity used to expose the standard white plate and the intensity representing the white background of the original.

3. Potential Measurement Circuit

Figure 4-103 is a cross-sectional diagram of the potential sensor, and Figure 4-104 is a block diagram of the potential measuring circuit.

The drive signal from the sensor drive circuit drives the chopper to detect the drum surface potential with the electrode in the sensor unit.The measurement signal representing the drum surface potential is amplified by the pre-amplifier circuit in the potential sensor unit and is sent to the drum surface potential detecting circuit.The drum surface potential detecting circuit, on the other hand, converts the AC signal into DC signals then, sends the signals to the level shift circuit through the 1/300 transformer circuit.The output signal (analog) of the level shift circuit is sent to the microprocessor on the DC controller PCB.

a. Making Checks

① LED1 ON

Normally, LED1 remains on while the main motor is rotating.
If it fails to turn on, the potential measuring unit is likely to be faulty.

Reference:

You may assume that the potential sensor is operating normally as long as LED1 is on normally.

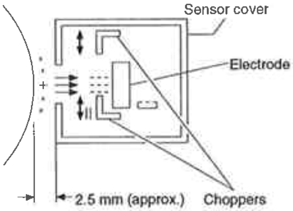

Sensor cover
Electrode
2.5 mm (approx.)
Choppers

Figure 4-103 Sensor Cross Section

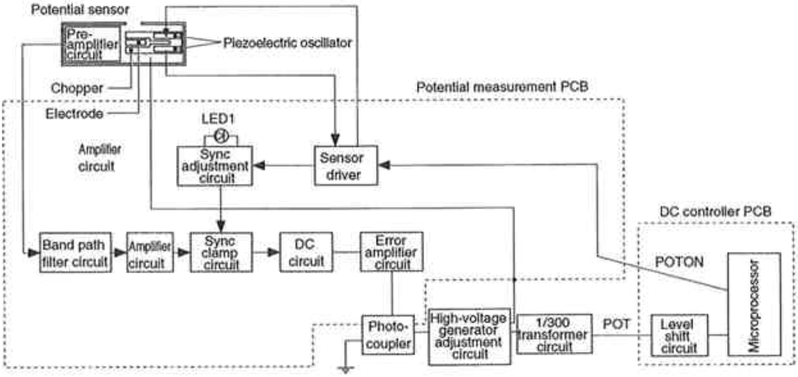

Potential sensor
Pre-amplifier circuit
Piezoelectric oscillator
Chopper
Electrode
Potential measurement PCB
LED1
Amplifier circuit
Sync adjustment circuit
Sensor driver
DC controller PCB
Band path filter circuit
Amplifier circuit
Sync clamp circuit
DC circuit
Error amplifier circuit
POTON
Microprocessor
Photo-coupler
High-voltage generator adjustment circuit
1/300 transformer circuit
POT
Level shift circuit

Figure 4-104

B. Controlling the Scanning Lamp Intensity

1. Outline

Figure 4-105 shows the circuit used to control the intensity of the scanning lamp, and the circuit has the following functions:

① Turning ON and OFF the scanning lamp.
② Controlling the intensity of the scanning lamp.
  - Maintains the intensity to a specific level against changes in the voltage of the power supply.
  - Controls the intensity to suit the sensitivity of the drum.
  - Controls the intensity to suit the density of the originals (AE control).
③ Checks the activation of the scanning lamp.

2. Operations

a. Turning ON and OFF the Scanning Lamp

When LAON (scanning lamp ON signal) is '0', the output of the differential amplification/potential control circuit goes '0', keeping the arc circuit from turning ON and, thereby, not supplying power to the scanning lamp (LA1).

When LAON goes '1', the output of the differential amplifier/phase control circuit goes '1', causing the arc circuit to turn ON and, thereby, supplying power to the scanning lamp (LA1).

b. Controlling the Intensity of the Scanning Lamp

The intensity of the scanning lamp is increased or decreased by controlling the supply voltage to the scanning lamp according to the intensity adjustment signal (LINT) from the DC controller PCB.

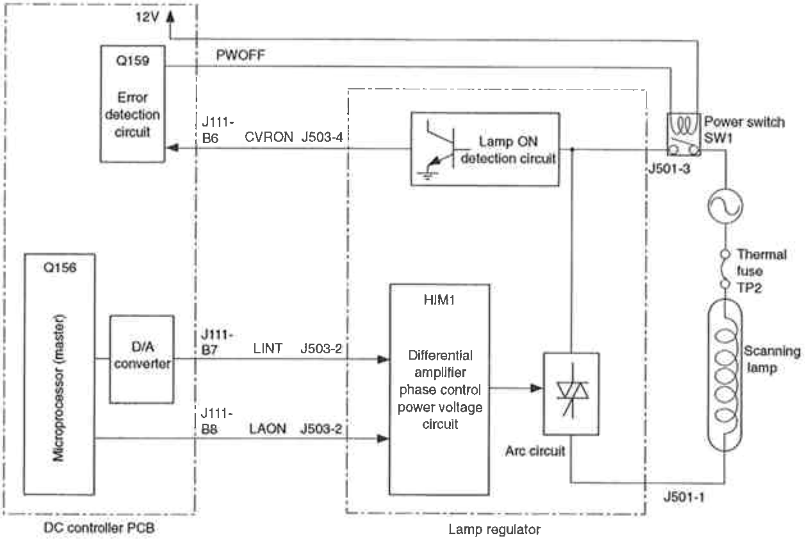

12V
Q159
Error detection circuit
PWOFF
J111-B6
CVRON
J503-4
Lamp ON detection circuit
Power switch SW1
J501-3
Thermal fuse TP2
Q156
Microprocessor (master)
D/A converter
J111-B7
LINT
J503-2
HIM1
Differential amplifier phase control power voltage circuit
J111-B8
LAON
J503-2
Arc circuit
Scanning lamp
J501-1
DC controller PCB
Lamp regulator

Figure 4-105

The LINT signal varies the pulse duty between 10% and 57.6% according to the setting of the Copy Density key or the density of the original, sensitivity of the drum and the setting of the intensity control VR so that the supply voltage to the scanner varies between 45 and 65 V (effective value) by way of exerting phase control.

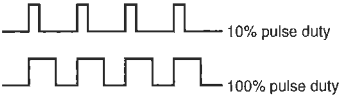


Figure 4-106

c. Detecting the Activation of the Scanning Lamp

The activation detection signal generates the ON detection signal (CVRON) at all times as long as the scanning lamp remains ON. The CVRON signal is sent to the error detection circuit of the DC controller PCB. If the lamp ON signal (LAON) goes '0' because of a short circuit or the like in the activation circuit and the scanning lamp turns ON, the DC controller PCB causes the PWOFF signal to go '0'. This condition turns OFF the relay in the power switch to turn OFF the power switch (SW1), thereby cutting off the AC power to the lamp regulator.

3. Automatic Exposure Control (AE)

The copier is equipped with an automatic exposure function that automatically controls the intensity of the scanning lamp according to the density of the original.

When copies are made in AE mode, copies free of fogging may be obtained without having to adjust the copy density for different originals. The lamp intensity controlled in AE mode is indicated by the copy density indicator on the control panel.

a. Points of AE Measurement

During AE rotation (AER), the scanner is moved forward 120 mm while keeping the scanning lamp ON; when the scanner moves in reverse, the drum surface potential corresponding to the four points on the copyboard is measured, and the measurements are sent to the DC controller PCB.

The DC controller PCB computes the average from the surface potential measurements to determine the intensity of the scanning lamp for copying.

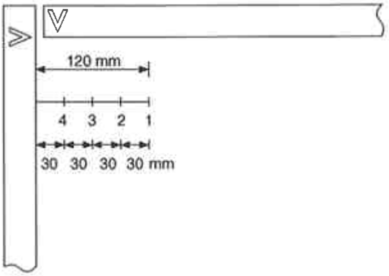


Figure 4-107

Figure 4-108 shows the changes in the intensity of the scanning lamp in relation to differing densities of originals. If the density of an original is lower (darker) than that of the Test Sheet and higher (lighter) than that of a newspaper, the intensity of the scanning lamp varies between F5 and F9 with reference to the copy density indications. If the original is lighter than the Test Sheet, the intensity will be equivalent to F5; if it is darker than a newspaper, the intensity will be equivalent to F9 for making copies.

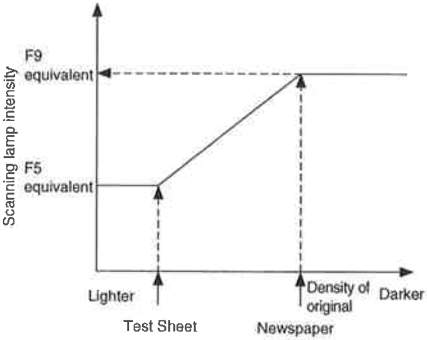


Figure 4-108

4. Check Points

a. Checking the Voltage of J111B-8 (LAON)

Check to make sure that the voltage between J111B-8 and J111B-5 (GND) on the DC controller PCB is about 5 V while the scanner is moving forward and is 0 V during initial rotation, while the scanner is moving in reverse, and during last rotation.

b. Intensity/AE Adjustment

Table 4-103 is a list of items that may be adjusted using the scanning lamp intensity control circuit.

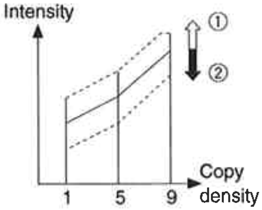
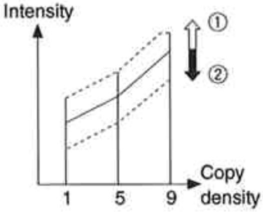
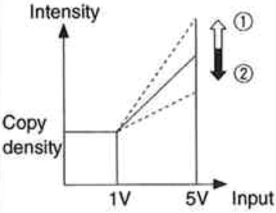
Service mode	Function	Adjustment	Remarks
[*][3][*] LIGHT _ 5 LIGHT 5P	Adjusts the optimum exposure for potential control (intensity adjustment for copy density 5)		① If the setting is increased in service mode, the intensity during copying increases, decreasing the copy density. ② If the setting is decreased in service mode, the intensity during copying decreases, increasing the copy density.
[*][3][*] GLEAM _ 5	Adjusts the optimum exposure for non-potential control (intensity adjustment for copy density 5)		① If the setting is increased in service mode, the intensity during copying increases, decreasing the copy density. ② If the setting is decreased in service mode, the intensity during copying decreases, increasing the copy density.
[*][3][*] AE _ SLOP	AE slope		① If the setting is increased in adjustment mode, copies of a newspaper will be darker. ② If the setting is decreased in adjustment mode, copies of a newspaper will be lighter.

Table 4-103

C. Controlling the Primary/Transfer Corona Current

1. Outline

Figure 4-109 shows the circuit that controls the primary/transfer corona, and the circuit has the following functions:

① Turning ON and OFF the primary corona current.
② Controlling the primary corona current to a specific level.
③ Turning ON and OFF the transfer corona.
④ Controlling the transfer corona to a specific level.

2. Controlling the Primary Corona Current

The DC controller PCB compares the drum surface potential V_D obtained by the potential detection circuit against the target potential; if it is different from the target potential, the signal used to control the primary corona current generated by the DC controller PCB is corrected.

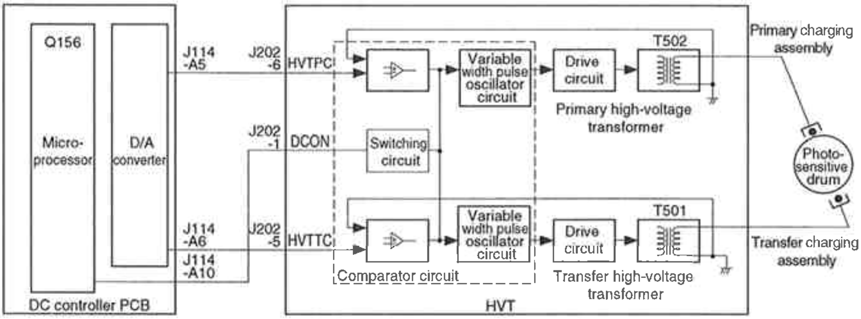
The corrected signal is converted to an analog value (HVTPC signal) by the D/A converter circuit and sent to the high-voltage transformer, thereby controlling the primary corona current.

The primary corona current output is turned ON and OFF by the DCON signal. The output of the primary corona current is controlled by the HVTPC signal.

If the HVTPC signal is about 3 to 11 V or less, the output of the primary corona current turns ON; it turns OFF when the signal is about 12 V or more.

a. Primary Corona Current Output OFF
    HVTPC is about 12 V.
    DCON is '0'.
        The variable width pulse oscillator circuit turns OFF.
            The drive circuit turns OFF.
                The primary high-voltage transformer turns OFF.

b. Primary Corona Current Output ON
    HVTPCB is less than about 11 V.
    DCON is '1'.
        The variable width pulse oscillator circuit turns ON.
            The comparator circuit turns ON.
                The drive circuit turns ON.
                    The primary high-voltage transformer turns ON.


Q156
Micro-processor
D/A converter
DC controller PCB
J114 -A5
J114 -A6
J114 -A10
J202 -6
J202 -1
J202 -5
HVTPC
DCON
HVTTC
Switching circuit
Variable width pulse oscillator circuit
Variable width pulse oscillator circuit
Comparator circuit
Drive circuit
Drive circuit
T502
T501
Primary high-voltage transformer
Transfer high-voltage transformer
HVT
Primary charging assembly
Photo-sensitive drum
Transfer charging assembly

Figuire 4-109

In this condition, the high-voltage transformer sends high voltage that suits the output of the primary charging level control signal (HVTPC) to the primary charging assembly.

If an excess corona current flows from the primary charging assembly because of changes in the environment, the return current to the comparator circuit increases, causing the output to decrease. This in turn decreases the corona current from the primary charging assembly so that the current is controlled to a specific level at all times.

In the photo mode, a target value lower than the dark area potential (VD) target value used for normal copying mode by about 80 V is used. As such, potential control is executed during copying in photo mode for the first time after the power switch is turned on to control the primary corona current.

3. Controlling the Transfer Corona Current

The transfer efficiency representing the transfer of toner from the photosensitive drum to copy paper is affected by changes in the environment (temperature, humidity).

To limit changes occurring in the density caused by changes in the environment, the transfer current is varied according to the temperature and humidity measured by the environment sensor.

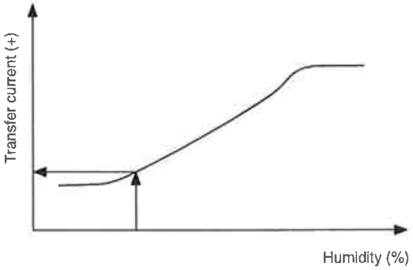


Figure 4-110

The transfer corona current output is turned ON and OFF by the high-voltage DC remote signal (DCON). Further, the output level of the transfer current is controlled by the transfer charging level control signal (HVTTC).

When the HVTTC signal is about 3 V or more and less than 11 V, the output of the transfer corona current turns ON; it turns OFF when the signal is about 12 V or more.

a. Transfer Corona Current OFF
HVTTC is about 12 V.
DCON is '0'.
  The comparator circuit turns OFF.
    The variable width pulse oscillator circuit turns OFF.
      The drive circuit turns OFF.
        The primary high-voltage transformer turns OFF.

b. Transfer Corona Current Output ON
HVTTC is less than about 11 V.
DCON is '1'.
  The comparator circuit turns ON.
    The variable width pulse oscillator circuit turns ON.
      The drive circuit turns ON.
        The primary high-voltage transformer turns ON.

In this condition, the high-voltage transformer sends high voltage that suits the output of the transfer charging level control signal (HVTTC) to the transfer charging assembly.

If an excess corona current flows from the transfer charging assembly because of changes in the environment, the return signal to the comparator circuit increases, and the output decreases, causing the corona current from the transfer charging assembly to decrease, thereby controlling the current to a specific level at all times.

D. Controlling the Separation/ Pre-Transfer Corona Current

1. Outline

The circuit shown in Figure 4-111 is the circuit that controls the separation corona current and the pre-transfer corona current, and the circuit has the following function:

① Turning ON and OFF the separation/pre-transfer corona current.
② Switching the separation corona current.
③ Controlling the separation corona current to a specific level.
④ Switching the pre-transfer corona current.
⑤ Controlling the pre-transfer corona current to a specific level.

The DC component of the separation corona current and the pre-transfer corona current is controlled to a specific level by collecting a sample signal from the secondary side of the high-voltage transformer (HVT) to eliminate the effects of changes in the environment on corona discharge. (The AC transformer is controlled for its voltage.)

The surface potential of the drum during copying is measured, and the measurements are used together with the measurements taken by the environment sensor to vary the separation corona current, thereby limiting the effects of changes in the environment.

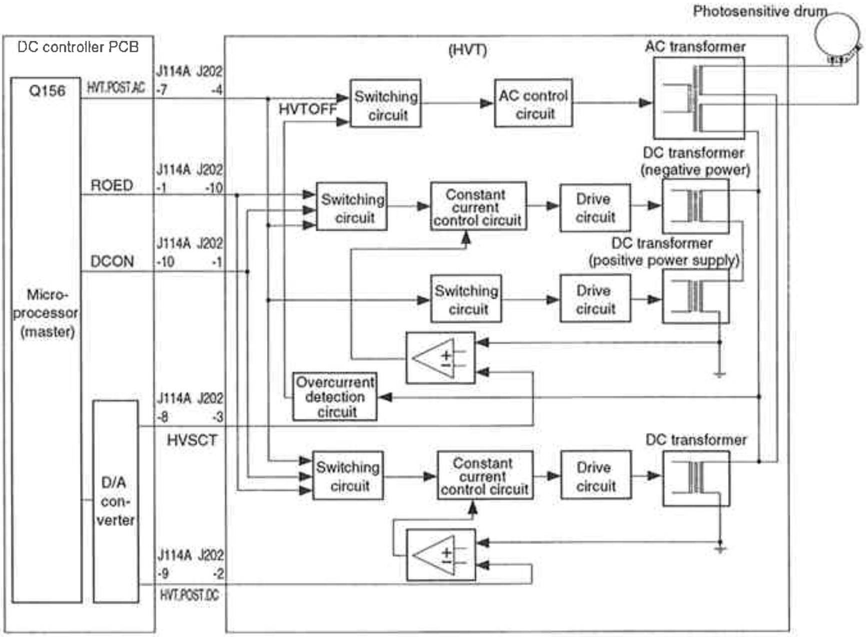

Photosensitive drum
DC controller PCB
(HVT)
AC transformer
Q156
HVT.POST.AC
J114A J202
-7 -4
HVTOFF
Switching circuit
AC control circuit
DC transformer (negative power)
J114A J202
ROED
-1 -10
Switching circuit
Constant current control circuit
Drive circuit
J114A J202
DCON
-10 -1
DC transformer (positive power supply)
Micro-processor (master)
Switching circuit
Drive circuit
Overcurrent detection circuit
J114A J202
-8 -3
HVSCT
DC transformer
D/A con-verter
Switching circuit
Constant current control circuit
Drive circuit
J114A J202
-9 -2
HVT.POST.DC

Figure 4-111

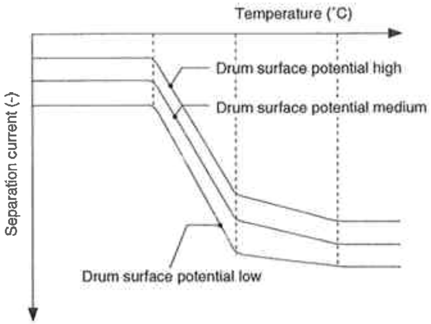


Figure 4-112

The corona current is varied to suit the measurements of temperature and humidity taken by the environment sensor, thereby limiting the effects of the environment.

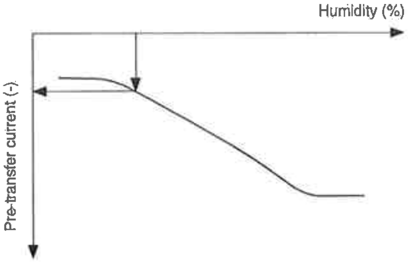


Figure 4-113

2. Turning ON and OFF the Separation/ Pre-Transfer Corona Current

The separation corona current and the pre-transfer corona current are turned ON and OFF by the HVTAC drive signal (HVP.POST.AC), roller electrode drive signal (ROED), and high-voltage DC drive signal (DCON).

3. Separation Corona Current (DC component)

For the output control value, the direct current of the separation corona current (DC component) is varied according to the voltage level (3 to 11 V) of the HVSCT signal.

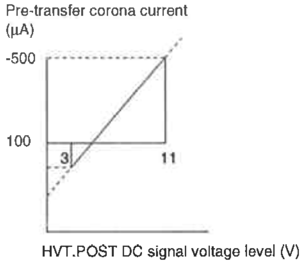


Figure 4-114

4. Pre-Transfer Corona Current (DC component)

The control value of the pre-transfer corona current (DC component) is varied according to the voltage level of the HVP.POST.DC signal.

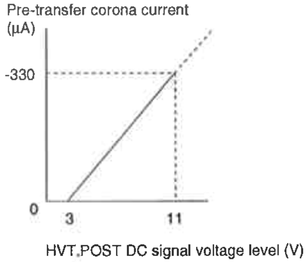


Figure 4-115

5. Controlling the DC Component Overcurrent of the Separation/Pre-Transfer Corona Current

If an overcurrent flows into the separation/pre-transfer charging assembly, the high-voltage transformer stop signal (HVTOFF) is generated to cut off the corona current (DC/AC component) temporarily to the pre-transfer/separation charging assembly.

When the HVOFF signal is generated, the copier continues to operate; application of the corona current will be resumed once the application voltage returns to normal.

If leakage occurs because of a broken charging wire and, as a result, an overcurrent flows to generate the HVTOFF signal, the corona current will not be applied unless the cause is removed.

Note:

Separation jams will be frequent if the corona current output to the transfer/separation charging assembly is stopped because of an overcurrent.

No warning will be issued to the control panel in response to this condition; if separation jams are frequent, check the relevant mechanism.

	Switching signal				Control signal	
Signal* / HVT output	DCON J114A-10	HVT.POST.AC J114A-7	ACBTP J114A-3	ROED J114A-1	HVSTC J114A-8	HVT.POST.DC J114A-9
Pre-transfer ON	'1'	'1'	'0'	'1'	—	3~11V
Pre-transfer OFF	'0'	'0'	'0'	'0'	—	2V
Separation ON	'1'	'1'	'0'	'1'	3~11V	—
Separation OFF	'0'	'0'	'0'	'0'	2V	—

Table 4-104 Combination of Transfer/Separation Signals

E. Controlling the Blank Exposure Lamp (LEDs)

1. Outline

The blank exposure lamp is a LED array consisting of 134 LEDs.

All 134 LEDs turn ON when the blank exposure lamp ON signal (BLKON) goes '0' while the drum is rotating to prevent adhesion of unwanted toner on the photosensitive drum. (This does not apply while an original is exposed or during potential control and AE measurement.) The six LEDs at the rear and the six LEDs at the front are kept ON at all times while the drum is rotating.

2. Controlling the Activation in Reduce Mode

When an original is being exposed while making a reduced copy, as many LEDs (rear) as corresponding to the ratio of reduction are turned ON to black out (white out) the non-image area.

The LEDs at the front are also turned ON to suit the copy paper size.

3. Controlling the Activation in Direct Mode

When an original is exposed in Direct mode, as many LEDs (both rear and front) as corresponding to the copy paper size are turned ON to black out (white out) the non-image area.

If a non-default ratio is selected or when making copies using sheets of a default size in Direct mode, a non-image width is created (Table 4-105) at the rear and the front (standard frame erasing).

The non-image width may be set to 0 mm in service mode.

4. Controlling the Activation in Sheet Frame Erasing Mode

In sheet frame erasing mode, LEDs are turned ON so that toner will not deposit along the sides of the copy (about 7 mm wide; the width will not vary in relation to the selected reproduction ratio).

Reference:

In multifeeder mode, copy paper size may be set or left "free." If you have set a size, frame erasing will be executed according to that size; if free is valid, frame erasing is controlled based on the maximum size (297 × 432 mm).

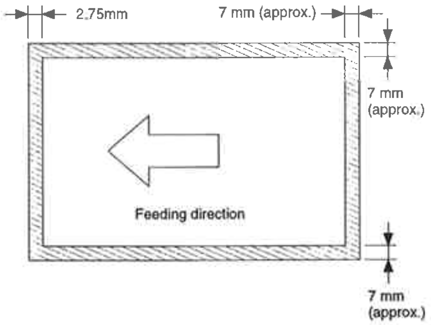


Figure 4-116

5. Controlling the Activation in Original Frame Erasing Mode

In original frame erasing, LEDs are turned ON so that a margin (about 2 mm) along the sides in relation to the original are kept free of toner.

Paper size	Non-image width
All paper sizes	2.75 ± 2.5mm

Table 4-105

6. Controlling the Activation in Book Frame Erasing Mode

In book frame erasing mode, LEDs are turned ON so that a margin (about 20 mm, standard) along the center of the specified size will be free of toner. The width may be adjusted to 20 ±20 mm in service mode.

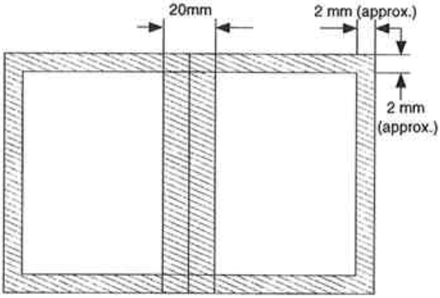


Figure 4-117

7. Controlling the Activation in Hole Image Erasing Mode

Hole image erasing mode is provided to prevent black dots from appearing on copies made of an original with holes. LEDs are turned ON so that a width covering such holes will be free of toner.

The width may be varied between 1 and 20 mm.

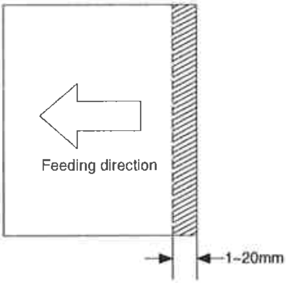

Feeding direction
1~20mm

Figure 4-118

8. Controlling the Activation of AE Mode

In AE mode, the surface potential of the drum is measured, requiring that LEDs be turned OFF.

Since only part of the photosensitive drum is measured for surface potential, however, only the LEDs shining such areas are turned OFF and other LEDs are turned ON.

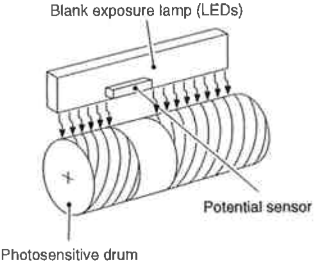

Blank exposure lamp (LEDs)
Potential sensor
Photosensitive drum

Figure 4-119

F. Drum Heater Circuit

1. Outline

The inside of the photosensitive drum is equipped with a drum heater (60 W), and the heater serves to keep the surface temperature of the drum at a specific level at all times.

The AC power is supplied to the drum heater through the power switch (SW1), door switch (SW2), drum heater switch (SW3), and AC driver.

When the drum heater switch is ON and the door switch (SW2) is ON, AC power is supplied regardless of whether the power switch (SW1) is ON or OFF. If the drum heater switch (SW3) is OFF, AC power is supplied to the drum heater only if the power switch is ON.

The drum heater drive circuit turns OFF when the drum heater drive signal (DHRD) generated by the DC controller PCB goes '0', supplying the drum heater with half-wave AC power.

If the drum heater drive signal (DHR) generated by the DC controller PCB is '1', on the other hand, the drum heater is supplied with full-wave AC power.

The relationship between the state of the copier and the ON/OFF state of the drum heater circuit of the AC driver is as shown in Table 3-308.

Copier state	Drum heater drive circuit
Power plug is connected and power switch is OFF	OFF (supplies half-wave AC power)
During copying	
During standby	ON (supplies full-wave AC power)

Table 4-106

The temperature of the drum is monitored at all times by the thermistor (TH) built into the drum heater.

If the temperature of the drum drops below a specific level, the output from the comparator circuit goes '1', turning ON the trigger circuit. This condition in turn turns ON the triac and activates the drum heater.

If the surface temperature of the drum is higher than a specific value, the output from the comparator circuit goes '0' and, as a result, the drum heater turns OFF.

Drum surface temperature control value: 42°C
Thermal fuse rated temperature: 76°C

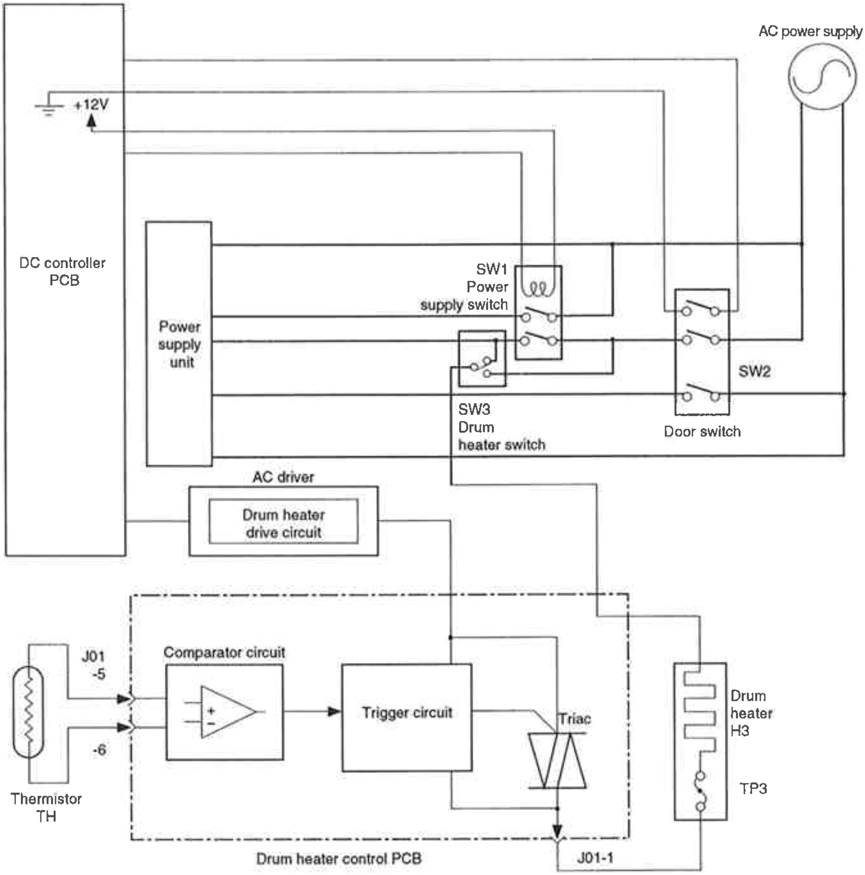

AC power supply
+12V
DC controller PCB
Power supply unit
SW1 Power supply switch
SW2
Door switch
SW3 Drum heater switch
AC driver
Drum heater drive circuit
J01 -5
-6
Comparator circuit
Trigger circuit
Triac
Thermistor TH
Drum heater control PCB
J01-1
Drum heater H3
TP3

Figure 4-120

2. Idle Rotation of the Photosensitive Drum and the Developing Cylinder

In a high-humidity environment, the photosensitive drum and the developing cylinder could absorb moisture, possibly lowering the density of copies made in the morning while at times distorting images.

To prevent such a problem, the photosensitive drum and the developing cylinder are caused to make an idle rotation during the wait-up period in the morning if the surface temperature of the upper fixing roller is 75°C or less.

The control period of idle rotation may be any of three types, selected in relation to the vapor ratio measured by the environment sensor as shown in Table 4-107.

Reference:

The term *vapor ratio* refers to the amount of moisture (g) in 1 kg of air.

The controls shown in Table 4-107 may be varied in service mode.

Vapor ratio	Idle rotation period	dle rotatin time
7g/kg or less	No idle rotation	None
from 7 to 2g/kg	From when the fixing roller reaches 100°C until fixing warm-up	2 to 2.5 min
12g/kg or more	From power-on until fixing warm-up	Up to 5 min

Table 4-107

G. Cleaning the Primary Charging Wire

1. Outline

The copier is equipped with an automatic cleaning mechanism for cleaning the charging wire of the primary charging assembly, and cleaning is executed when the following conditions are met:

- The temperature of the fixing roller is 100°C or less at power-on.
- Charging wire cleaning is executed in user mode. (p. 1-16)
- Last rotation (LSTR) has ended after making about 2000 copies.

If cleaning has been executed under the above two conditions, cleaning is executed after making 2000 copies thereafter.

2. Operation of the Primary Charging Wire Cleaning Wire

When the power switch is ON and the surface temperature of the fixing roller is 100°C or less, the primary charging wire cleaning motor (M12) rotates clockwise to move the cleaner forward for about 20 sec. The drive motor rotates counterclockwise to move the cleaner in reverse for about 16 sec. (The copier is not equipped with a cleaner position detection mechanism.)

The RAM on the DC controller PCB keeps count of how many times the charging wire has been cleaned. Cleaning is executed each time 2000 copies have been made; in the case of continuous copying, cleaning is executed when as many copies as specified have been made.

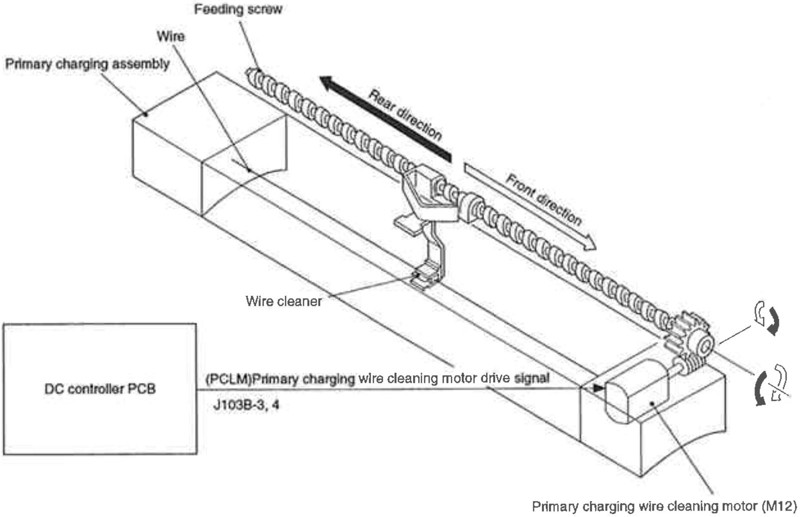

Feeding screw
Wire
Primary charging assembly
Rear direction
Front direction
Wire cleaner
DC controller PCB
(PCLM)Primary charging wire cleaning motor drive signal
J103B-3, 4
Primary charging wire cleaning motor (M12)

Figure 4-121

H. Cleaning the Pre-Transfer, Transfer, and Separation Charging Wires Automatically

The copier is equipped with an automatic cleaning mechanism for the charging wires used in the pre-transfer, transfer, and separation charging assemblies.

As in the case of the primary charging wire automatic cleaning mechanism, a cleaner drive motor is used to operate the cleaning mechanism.

The mechanism operates under the same conditions and for the same length of time as the cleaning mechanism used for the primary charging wire.

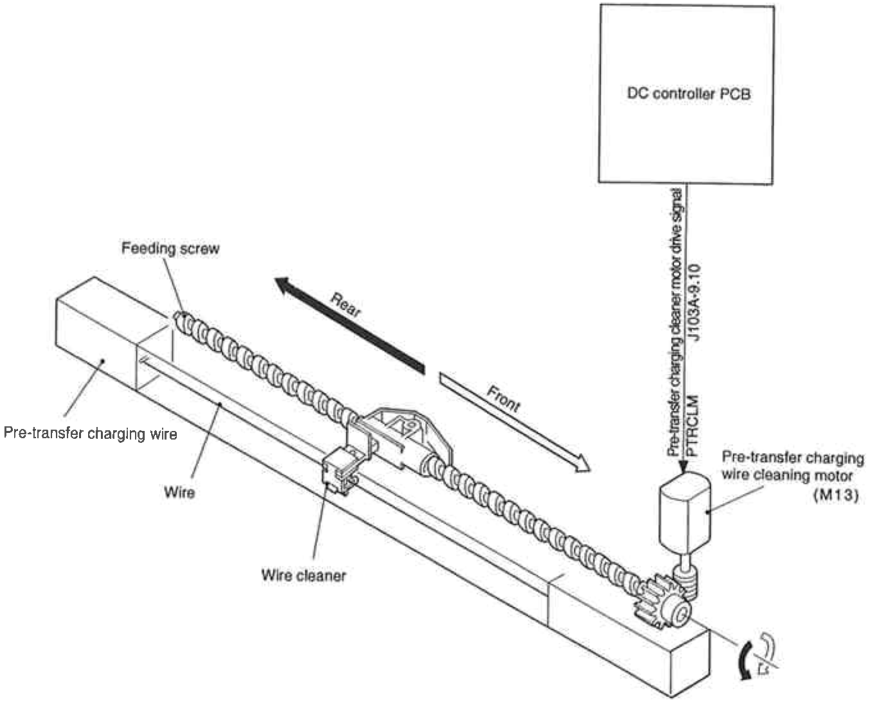

DC controller PCB
Pre-transfer charging cleaner motor drive signal
PTRCLM
J103A-9.10
Feeding screw
Rear
Front
Pre-transfer charging wire
Wire
Wire cleaner
Pre-transfer charging wire cleaning motor (M13)

Figure 4-122

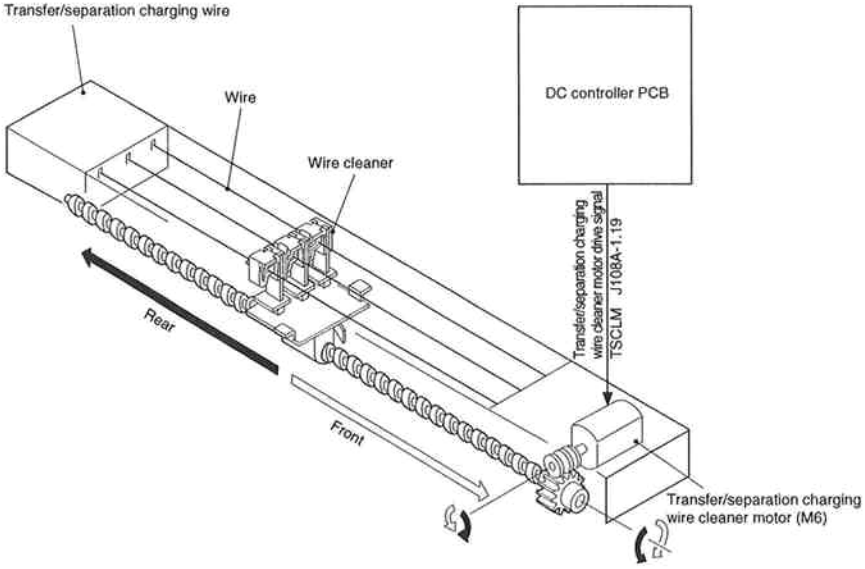

Transfer/separation charging wire
Wire
Wire cleaner
DC controller PCB
Transfer/separation charging wire cleaner motor drive signal
TSCLM J108A-1.19
Rear
Front
Transfer/separation charging wire cleaner motor (M6)

Figure 4-123 (transfer/separation charging assembly)

II. DEVELOPING ASSEMBLY AND CLEANING ASSEMBLY

A. Outline

The developing assembly is driven by engaging and disengaging the drive from the main motor by the developing clutch (CL8).

The cleaning assembly is supplied with drive by the main motor through drum gears.

The toner inside the developing assembly is monitored by the toner level detection circuit; when the level of the toner drops below a specific value, the toner sensor (TS1) causes the message Add Toner to appear on the control panel. Then, copying operation will be forced off after making about 200 copies.

The developing assembly is supplied with toner by the hopper assembly by the work of the hopper motor 1 (M11); the toner inside the hopper assembly is stirred by the hopper motor 2 (M10).

The toner scraped off by the cleaning blade is moved to the rear of the copier and sent to the waste toner case through the waste toner feeding pipe.

The waste toner feeding assembly is equipped with a torque limiter. When the screw becomes clogged with waste toner, the waste toner feeding screw locking detection turns ON to stop the main motor (M1).

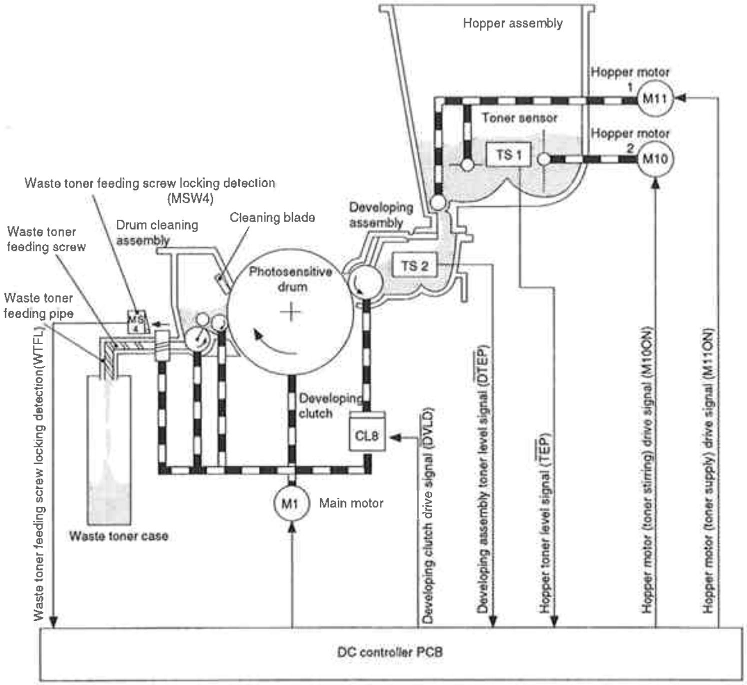

Hopper assembly
Hopper motor 1
M11
Toner sensor
TS 1
Hopper motor 2
M10
Waste toner feeding screw locking detection (MSW4)
Waste toner feeding screw
Drum cleaning assembly
Cleaning blade
Developing assembly
TS 2
Waste toner feeding pipe
MS 4
Photosensitive drum
Developing clutch
CL8
M1
Main motor
Waste toner case
Waste toner feeding screw locking detection(WTFL)
Developing clutch drive signal (DVLD)
Developing assembly toner level signal ($\overline{\text{DTEP}}$)
Hopper toner level signal ($\overline{\text{TEP}}$)
Hopper motor (toner stirring) drive signal (M10ON)
Hopper motor (toner supply) drive signal (M11ON)
DC controller PCB

Figure 4-201

B. Detecting the Toner Level and Controlling the Supply Operation

The toner inside the developing assembly is monitored by the toner sensor (TS2); when the toner inside the developing assembly drops below a specific level while the developing clutch (CL8) is ON during copying, the developing assembly toner level signal ($\overline{\text{DTEP}}$) goes '0' and the signal is sent to the DC controller PCB.

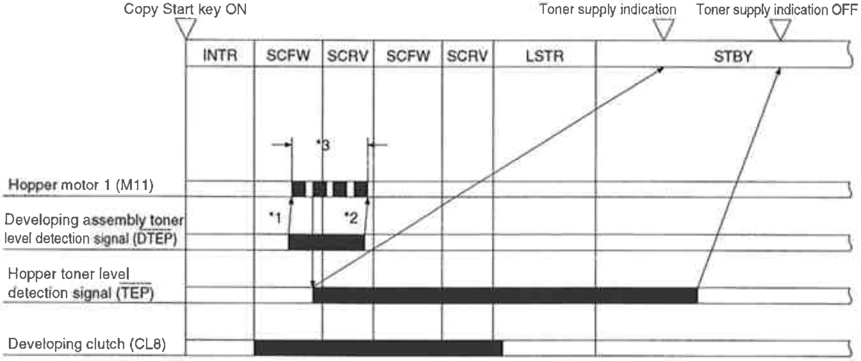
The DC controller generates hopper motor (toner supply) drive signal (M11ON) if it detects the developing assembly toner level signal ($\overline{\text{DTEP}}$) for 0.3 sec or more to supply toner from the hopper assembly.

When the toner inside the developing assembly reaches a specific level and the developing assembly toner level signal $\overline{\text{DTEP}}$=1 is detected for 0.7 sec or more, the hopper motor (M11) is stopped.

If the toner sensor (TS2) becomes faulty for some reason and if the DC controller PCB detects the developing assembly toner level signal ($\overline{\text{DTEP}}$=0) for more than 120 sec without an adequate amount of toner inside the developing assembly, 'E202' will be indicated and copying operation will be stopped.

The toner inside the hopper assembly is monitored by the hopper toner sensor ($\overline{\text{TS1}}$) while the hopper motor 1 (M11) is supplying or stirring toner.

When the level of toner inside the hopper drops below a specific value, the hopper toner level detection signal ($\overline{\text{TEP}}$) goes '0'; if the DC controller PCB detects this signal for 1 sec or more, it will issue the message Add Toner on the control panel. At this time, the Copy Start key on the control panel will change to red at that time.


Copy Start key ON
Toner supply indication
Toner supply indication OFF
INTR
SCFW
SCRV
SCFW
SCRV
LSTR
STBY
*3
Hopper motor 1 (M11)
*1
*2
Developing assembly toner level detection signal (DTEP)
Hopper toner level detection signal (TEP)
Developing clutch (CL8)

*1 Supply operation will be started if the developing assembly toner level detection signal=0 is detected for 0.3 sec or more.

*2 Supply operation will be ended if the developing assembly toner level detection signal=1 is detected for 0.7 sec or more.

*3 The sequence of toner supply is stopped for 1 sec after driving the hopper for 2.0 sec, and this sequence is repeated.

Figure 4-202

The number of copies valid at this time is stored in RAM on the DC controller PCB. If the hopper toner level detection signal ($\overline{\text{TEP}}$=1) is detected for 1 sec or more, the DC controller PCB will assume the presence of toner and clear the counter reading while removing the message Add Toner from the control panel.

Reference:

A piezoelectric oscillator is used inside the developing assembly and the hopper. In the absence of toner, the oscillator oscillates at several kHz, causing the sensor output to be '0'. In the presence of toner, the weight of the toner stops the oscillation of the oscillator, causing the sensor output to go '1'.

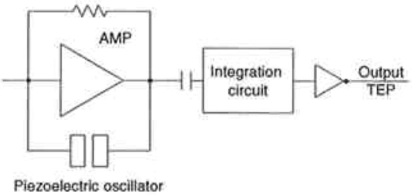


Figure 4-203

Caution:

Do not install the developing assembly locking assembly without setting the developing assembly in the copier.
The toner collecting in the path from the hopper to the developing assembly could move astray because of the vibration caused by inspection/repairs work.

C. Controlling the Developing Bias/Roller Electrode

1. Outline

The developing cylinder during copying is given an AC bias and DC bias. The DC bias is a sum of V_{L2} measured by the potential sensor before starting copying operation and 100 V.

To prevent adhesion of unwanted toner to the photosensitive drum, the DC bias is varied according to the surface potential of the drum.

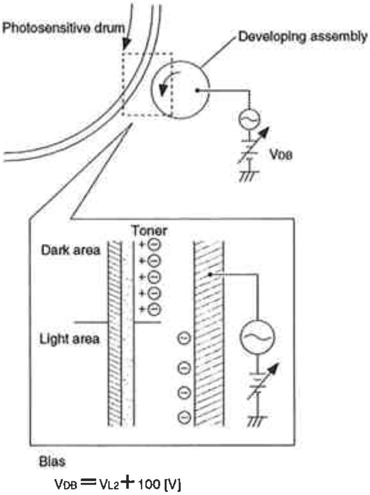


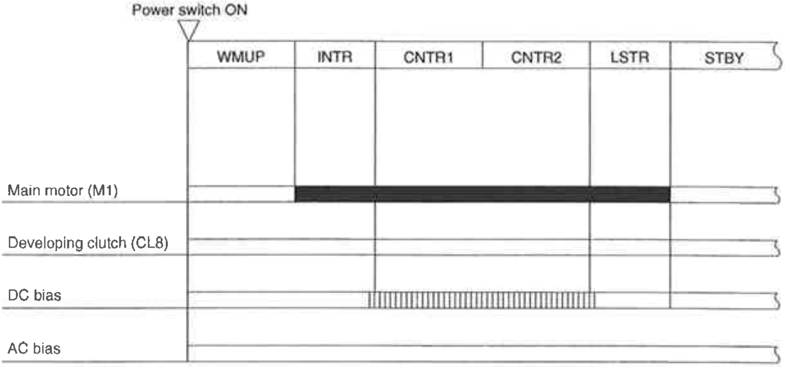
Figure 4-204

2. Control Timing

Bias	Voltage	Period	Description
DC component	+600V	CNTR1, 2	The surface potential changes at all times. It is therefore measured by the potential sensor and varied to prevent adhesion of unwanted toner to the drum.
	+600V	INTR, AER, LSTR during copying	Prevents adhesion of unwanted toner to the drum.
	VL2+100 [V]	SCFW, SCRV during copying	Prevents fogging of white background.
AC component 1500 Vp-p, 2700Hz			Executes toner projection.

Table 4-201

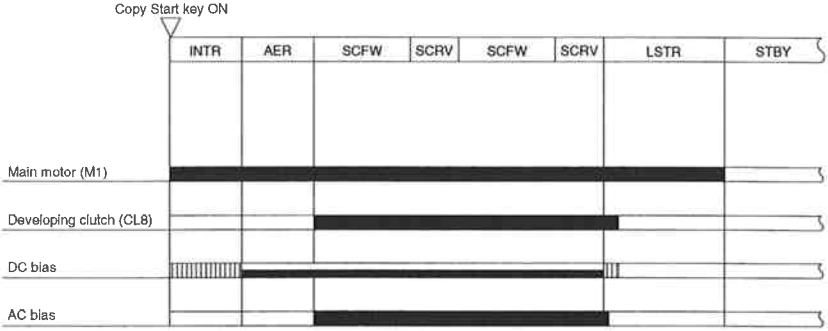
If the surface temperature of the fixing roller is 75°C or less and the ambient temperature is 17°C or more,


Power switch ON
WMUP
INTR
CNTR1
CNTR2
LSTR
STBY
Main motor (M1)
Developing clutch (CL8)
DC bias
AC bias

DC bias: ▥ : +600V

Figure 4-205

Making the 2nd and subsequent copies after 60 min or up to 10 min after power-on,


Copy Start key ON
INTR
AER
SCFW
SCRV
SCFW
SCRV
LSTR
STBY
Main motor (M1)
Developing clutch (CL8)
DC bias
AC bias

DC bias: ▥ :+600V

▬ :Potential control value (VL2 + 100 V)

Figure 4-206

Making the 1st copy after 60 min or more or 10 min or more after power-on,

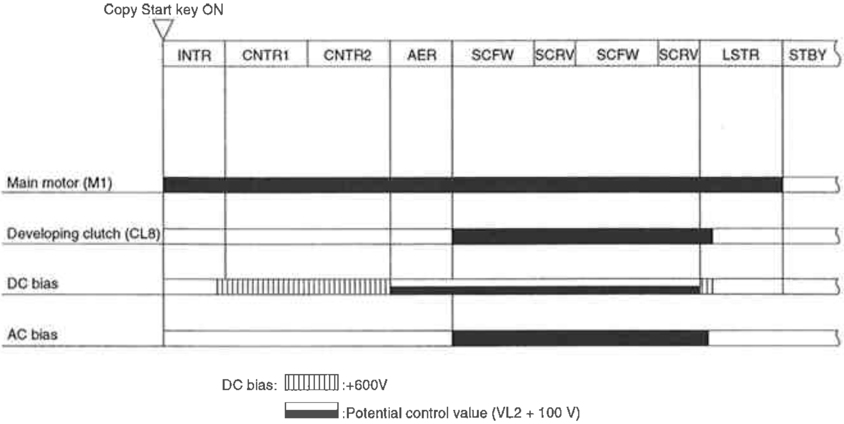

Copy Start key ON
INTR
CNTR1
CNTR2
AER
SCFW
SCRV
SCFW
SCRV
LSTR
STBY
Main motor (M1)
Developing clutch (CL8)
DC bias
AC bias
DC bias: ▥ :+600V
▬ :Potential control value (VL2 + 100 V)

Figure 4-207

3. Developing Bias Control Circuit

The circuit that controls the developing bias is equipped with the following functions:

a. Turing the AC bias ON and OFF.
b. Controlling the DC bias to a specific level.

① Turning OFF the AC Bias
The developing bias remote signal ACBTP is '0'.
The AC bias switch circuit turns OFF.
The drive circuit turns OFF.
The AC transformer (T401) output stops.
The above condition stops the AC bias to the developing cylinder.

② Turning ON the AC Bias
The developing bias remote signal ACBTP is '1'.
The drive circuit turns ON.
The AC bias switch circuit turns ON.
The above condition causes the voltage to be increased to 1500 Vp-p and sent to the developing cylinder.

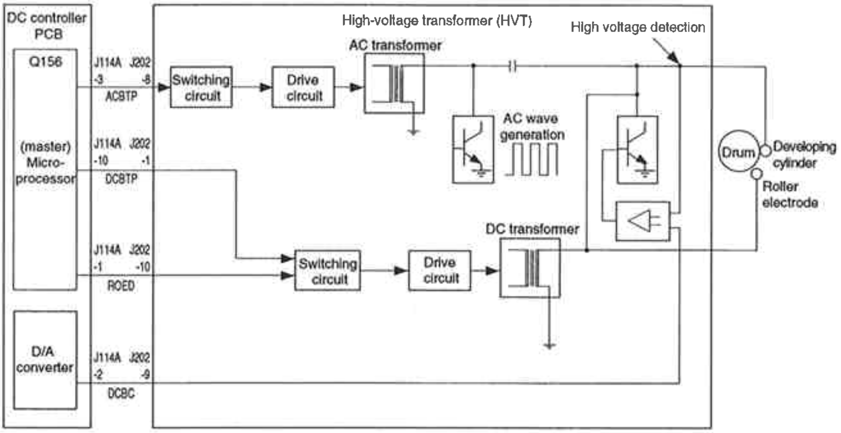

DC controller PCB
Q156
(master) Micro-processor
D/A converter
J114A J202
-3 -8
ACBTP
J114A J202
-10 -1
DCBTP
J114A J202
-1 -10
ROED
J114A J202
-2 -9
DCBC
High-voltage transformer (HVT)
High voltage detection
AC transformer
Switching circuit
Drive circuit
AC wave generation
DC transformer
Switching circuit
Drive circuit
Drum
Developing cylinder
Roller electrode

Figure 4-208

③ Controlling the DC Bias Voltage to a Specific Level

The voltage level of the DC bias is determined by the level of the signal (DCBC) from the DC controller PCB.

- The high-voltage DC remote signal (DCBTP) is '1'.
- The roller bias remote signal (ROED) is '1'.
- The developing DC control signal DCBC is 3 V or more or less than 12 V, and the AC bias switch circuit turns ON.

Under the above condition, the DC bias output will increase if the signal (DCBC) from the DC controller PCB increases.

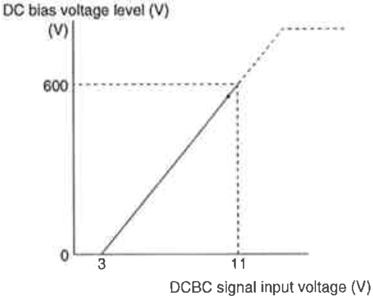


Figure 4-209

4. Roller Electrode Bias Control Circuit

The circuit used to control the roller electrode bias is provided with the following functions:

a. Turning ON the Roller Electrode

① Roller Electrode ON Signal

- When the high-voltage DC remote signal (DCBTP) is '1' and the roller bias signal (ROED) is '1', the switching circuit turns ON and the high-voltage transformer drive circuit turns ON.
  The DC transformer T402 turns ON to supply a bias of about 1000 V to the roller electrode. (The DC bias is not subjected to constant voltage control.)

② Turning OFF the Roller Electrode

- When the high-voltage DC remote signal (DCBTP) is '0' and the roller bias signal (ROED) is '0', the switching circuit turns OFF and the high-voltage transformer drive circuit turns OFF. The DC transformer T402 turns OFF to deprive the roller electrode of the bias.

	Switching signal				Control signal
Signal* / HVT output	DCBTP J114A-10	ACBTP J114A-3	ROED J114A-1	ACON J114A-7	DCBC J114A-2
DC bias ON	'1'	'1'	'1'	'0'	3~11V
DC bias OFF	'0'	'0'	'0'	'0'	2V
Roller bials ON	'0'	'0'	'1'	'0'	—
Roller bials OFF	'0'	'0'	'0'	'0'	—

* The connector number of the signal name represents the output from the DC controller PCB.

Table 4-202 Combination of Developing DC/Roller Electrode Bias Output Signals

D. Detecting the Locking of the Waste Toner Feeding Screw

If, for some reason, the waste toner pipe becomes clogged with waste toner and the waste toner feeding screw is prevented from rotation, the waste toner can fall out of the pipe.

To prevent such a problem, a feeding screw locking detection mechanism is provided.

The gear Ⓐ (Figure 4-210) for the waste toner feeding screw is subjected to a force in the direction of the axis when the feeding screw gets locked and is moved along the axis.

The movement of the gear Ⓐ is monitored by the waste toner feeding screw locking detection switch (MS4).

When MS4 is pushed by the gear Ⓐ, the main motor (M1) stops, and an error indication (E013) will be indicated on the control panel.

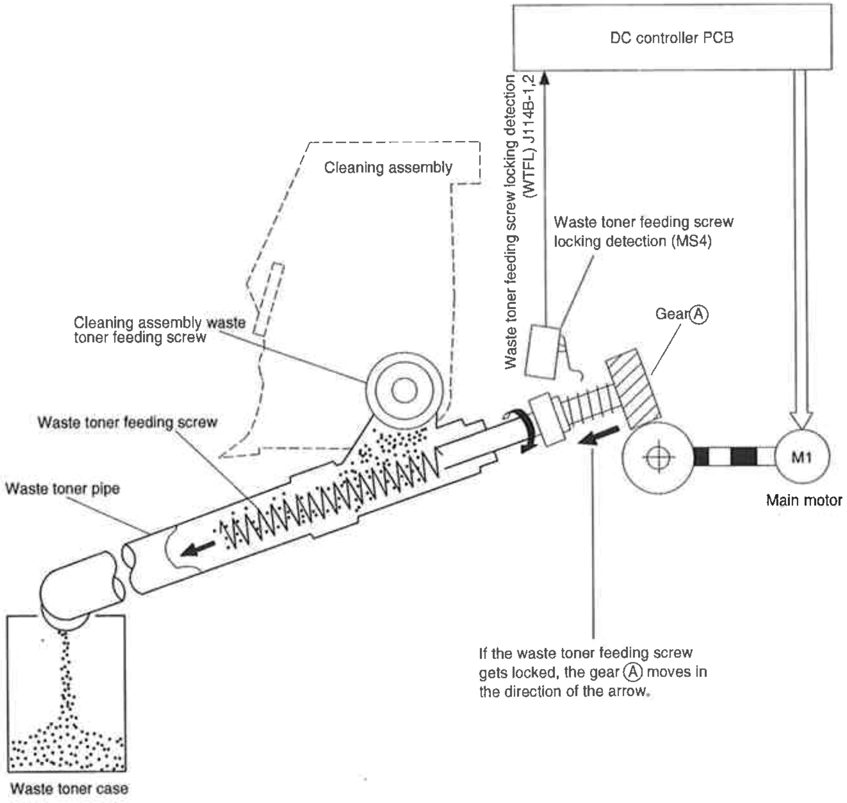

DC controller PCB
Waste toner feeding screw locking detection (WTFL) J114B-1,2
Cleaning assembly
Waste toner feeding screw locking detection (MS4)
Gear Ⓐ
Cleaning assembly waste toner feeding screw
Waste toner feeding screw
Waste toner pipe
M1
Main motor
If the waste toner feeding screw gets locked, the gear Ⓐ moves in the direction of the arrow.
Waste toner case

Figure 4-210 (rear view)

III. DISASSEMBLY AND ASSEMBLY

This section explains mechanical characteristics and describes how to disassemble/assemble the machine.

Be sure to observe the following when disassembling/assembling the machine:

1. ⚠ Disconnect the power plug before starting the work.
2. Unless otherwise shown, assemble the parts by reversing the steps given to disassemble them.
3. Identify each screw by type (length, diameter) and location.
4. A washer is used for one of the mounting screws on the rear cover to protect against static electricity; be sure to use the washer when assembling the part.
5. A washer is used for some mounting screws (for grounding wire, varistor) to ensure correct electrical continuity; be sure to use the washer when assembling the part.
6. As a rule, do not operate the machine while any of its parts are removed.
7. When sliding out the duplexing unit or the fixing assembly, be sure to turn off the front door switch or the power switch.

A. Scanning Lamp

1. Removing the Scanning Lamp

1) Remove the copyboard glass retainer, and remove the copyboard glass.
2) Move the No. 1 mirror mount to the center.
3) Remove the two mounting screws ①, and remove the reflecting shade ② and the support plate ③.

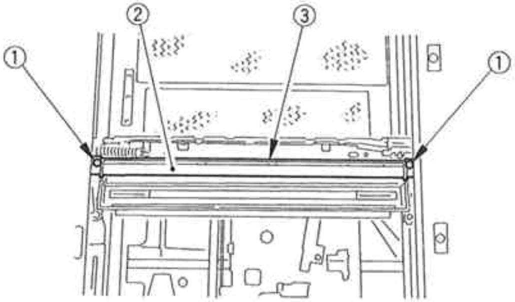


Figure 4-301

4) While pushing the rear electrode block to the rear with a finger, remove the scanning lamp ④.

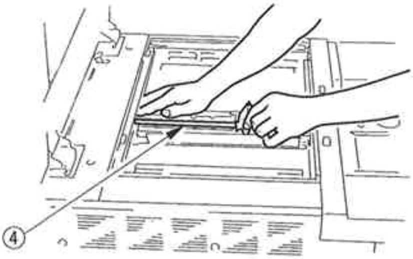


Figure 4-302

Caution:
1. Do not work until the surface of the scanning lamp has cooled.
2. Do not leave fingerprints on the surface of the scanning lamp.
3. If the surface of the scanning lamp is soiled, dry wipe it.
4. Do not leave fingerprints on the reflecting shade.
5. Take care not to deform the deflecting shade.
6. When installing the lens hood, fit the boss on the lens hood into the cut-off in the rail at the front; then, engage the hook at the rear while turning the lens hood slightly to the right.

2. Removing the Thermal Fuse

1) Remove the copyboard glass retainer, and remove the copyboard glass.
2) Remove the control panel.
3) Remove the scanning lamp.
4) Move the No. 1 mirror mount to the right end.
5) Remove the two mounting screws ①, and remove the thermal fuse ②.

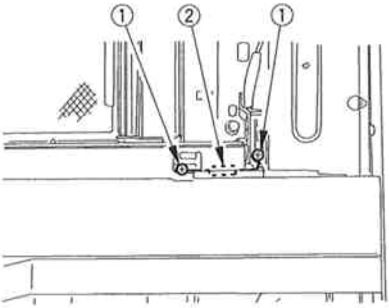


Figure 4-303

B. Standard White Plate Assembly

1) Remove the RDF.
2) Remove the rear cover.
3) Remove the two mounting screws ①, and remove the copyboard glass right retaining plate ②.

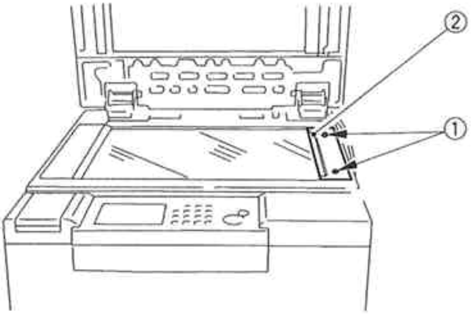


Figure 4-304

4) Remove the two stepped screws ③ (M3x6), and remove the standard white cover ④.

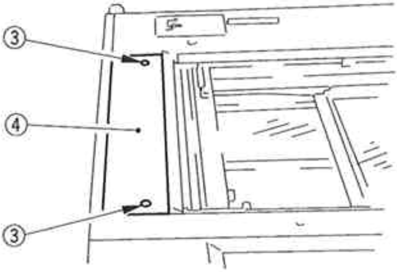


Figure 4-305

5) Remove the six mounting screws ③, and remove the RDF mount cover ④.
6) Remove the two mounting screws ⑤, and remove the rear top cover ⑥.

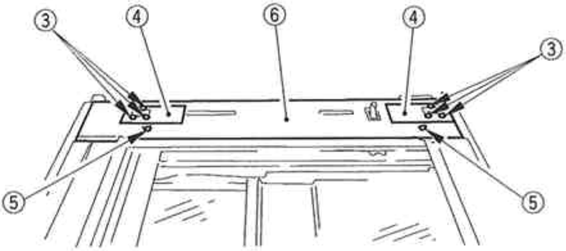


Figure 4-306

7) Remove the control panel.
8) Remove the two mounting screws ⑦, and remove the standard white plate ⑧.

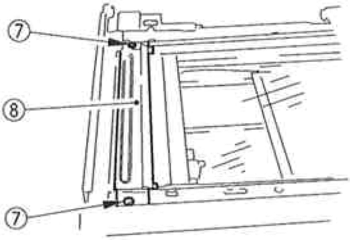


Figure 4-307

C. Pre-Exposure Lamp Unit

1. Removing the Pre-Exposure Lamp Unit

1) Open the front door, and slide out the hopper assembly; then, slide out the fixing/feeding unit.
2) Remove the process unit. (See p. 7-17.)
3) Remove the primary charging assembly and the pre-transfer charging assembly.
4) Remove the blank exposure lamp assembly.
5) Remove the two mounting screws ①, and remove the blank exposure assembly rail stay ②.

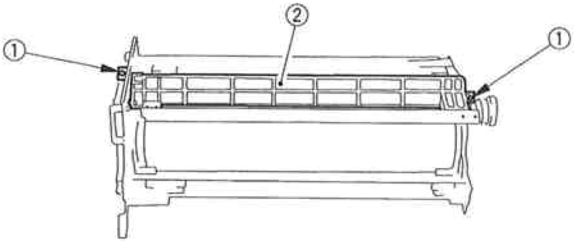


Figure 4-308

6) Disconnect the connector ①, and remove the two mounting screws ②; then, remove the pre-exposure lamp unit ③.

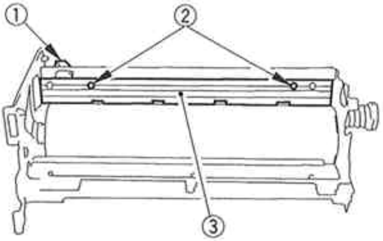


Figure 4-309

D. Blank Exposure Lamp Assembly

1. Removing the Blank Exposure Lamp Assembly

1) Open the front door, and slide out the hopper assembly.
2) Disconnect the two connectors ①, and remove the mounting screw ②; then, slide out the blank exposure lamp assembly ③.

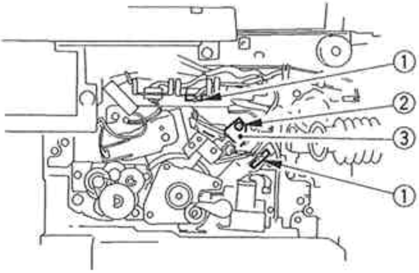


Figure 4-310

Caution:
Take care not to damage the photosensitive drum when removing the blank exposure lamp assembly.

E. Photosensitive Drum

Photosensitive Drum

The copier's photosensitive drum is a high-sensitivity amorphous silicon drum, whose sensitivity may lower if the drum or the process unit is not positioned correctly. Keep the following in mind whenever handling the photosensitive drum:

① If you have removed the process unit from the copier or the photosensitive drum from the process unit, keep the photosensitive drum out of light.
To do so, use the photosensitive drum protection sheet, or wrap six or more sheets of A3 or larger copy paper.
② Do not place the process unit or the photosensitive drum near a window or areas subject to direct rays of the sun.
③ Avoid areas subject to high temperature/ humidity, low temperature/humidity or rapid changes in temperature and humidity.
④ Avoid areas subject to dust, ammonium gas, or organic solvent gas.
The above points apply equally to the photosensitive drums of other models.

1. Removing the Drum Unit

1) Open the front door, and slide out the hopper assembly.
2) Take out the process unit. (See p. 7-17.)
3) Take out the primary charging assembly and the pre-transfer charging assembly.
4) Remove the blank exposure lamp assembly.
5) Remove the blank exposure assembly rail stay.
6) Remove the three mounting screws ①, and remove the gear plate ②.

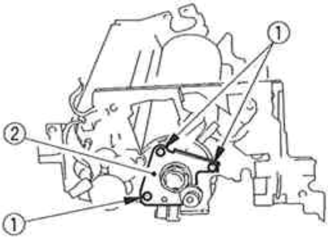


Figure 4-311

7) Remove the two mounting screws ③, and remove the front side stay ④.

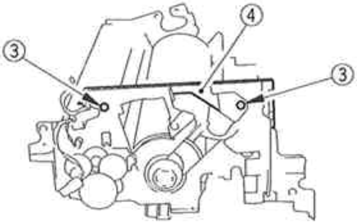


Figure 4-312

8) Holding it as shown, remove the photosensitive drum ⑤.

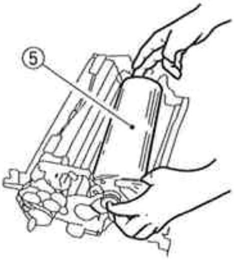


Figure 4-313

Caution:
Remove the photosensitive drum, taking care not to damage it.
You need not remove the bearing at the rear and the gear at the front.

2. Replacing the Drum Heater

1) Remove the photosensitive drum from the process unit.
2) Remove the two mounting screws ①, and remove the flange ② at the front.

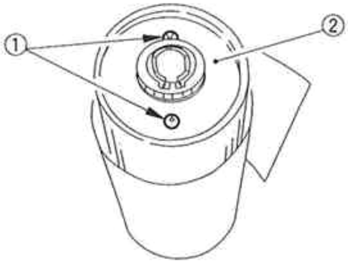


Figure 4-314

Caution:
After removing the photosensitive drum, wrap about five to six sheets of copy paper or the drum protection sheet kept near the waste toner case around the photosensitive drum to protect the photosensitive drum from dirt and scratches.

3) Pull out the flange from the front, and disconnect the connector; then, remove the drum heater from the photosensitive drum, and remove the drum heater.

3. Installing the Photosensitive Drum

Install the photosensitive drum by reversing the steps used to remove it, while paying attention not to soil or damage its surface.

F. Potential Sensor Assembly

1. Removing the Potential Sensor Assembly

1) Remove the blank exposure lamp assembly from the copier. (See p. 4-41.)

Caution:
The potential sensor assembly and the blank exposure lamp assembly are constructed as a single entity.

G. Primary Charging Assembly

1. Removing the Primary Charging Assembly

1) Open the front door, and open the hopper assembly.
2) Loosen the mounting screw ①, and slide up the fixing member ② to fix it in place.
3) Disconnect the connector ③, and remove the primary charging assembly ④.

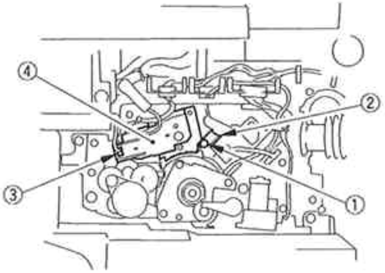


Figure 4-315

Note:
After servicing the charging assembly, execute cleaning of the wire in user mode. (If the surface temperature of the upper fixing roller is 100°C or less, you need not perform this step, as the execution will be automatic.)

H. Pre-Transfer Charging Assembly

1. Removing the Pre-Transfer Charging Assembly

1) Open the front assembly, and slide out the hopper assembly.
2) Remove the mounting screw ①, and disconnect the connector ②; then, remove the pre-transfer charging assembly ③.

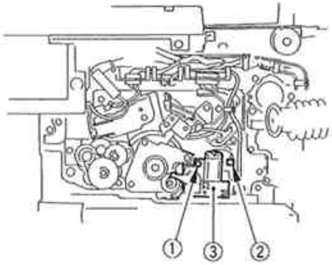


Figure 4-316

Note:
After servicing the charging assembly, execute cleaning of the wire in user mode. (If the surface temperature of the upper fixing roller is 100°C or less, you need not perform this step, as the execution will be automatic.)

I. Transfer/Separation Charging Assembly

1. Removing the Transfer/Separation Charging Assembly

1) Open the front door, and slide out the fixing/feeding unit.
2) Remove the fixing/feeding front cover.
3) Remove the mounting screw ①, and remove the fixing guide ②.

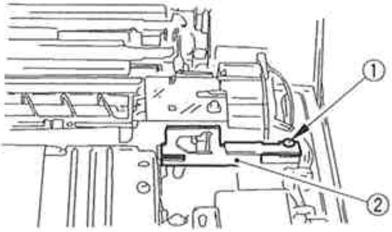


Figure 4-317

4) Disconnect the connector ③, and slide out the transfer/separation charging assembly ④ to the front; then, remove it by lifting it at an angle to the left.

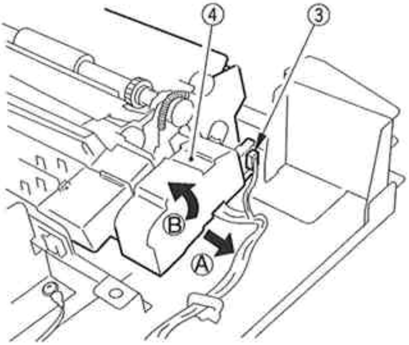


Figure 4-318

2. Installing the Transfer/Separation Charging Assembly

Install the transfer/separation charging assembly by reversing the steps used to remove it with the following in mind:

1) Fit the four bosses ① of the transfer/separation charging assembly into the cut-offs of the fixing/feeding unit frame ②.
2) Slide it from the front so that the leaf spring ③ will come into contact with the frame of the transfer/separation charging assembly.

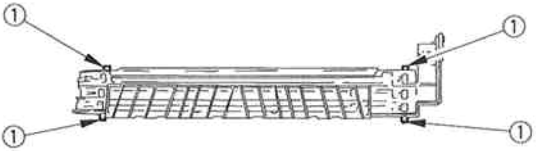


Figure 4-319

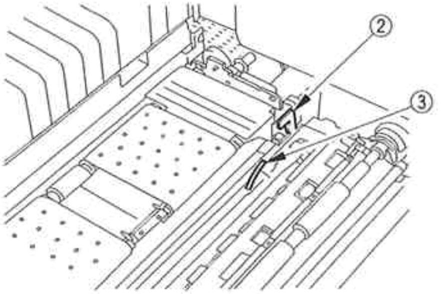


Figure 4-320

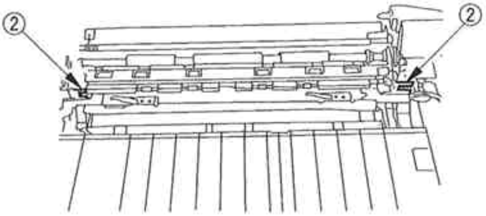


Figure 4-321

3) Install the fixing guide plate ④ with a mounting screw ⑤.

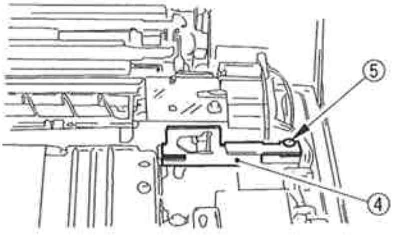


Figure 4-322

4) Execute cleaning of the wire in user mode. (If the surface temperature of the upper fixing roller is 100°C or less, you need not perform this step, as the execution will be automatic.)

J. Charging Wire

1. Outline

The primary, pre-transfer, transfer/separation charging wires are located around the photosensitive drum. (The wire diameter is 0.06 mm.)

2. Removing the Primary Charging Assembly Wire Cleaner

1) Hold the wire cleaner, and disengage it with a flat-blade screwdriver.

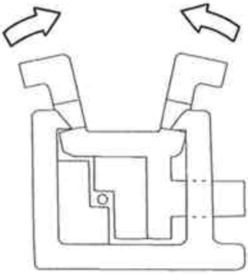


Figure 4-323

3. Installing the Charging Wire

The charging wire (except the grid wire) is installed in the same way for all charging assemblies. (The following cites the primary charging assembly.)

1) Remove the shielding plate (left, right) of the charging assembly.
   Be sure to remove the left and right shielding plates individually to prevent deformation of the primary charging assembly. (At the same time, take care not to loosen the mounting screw ① on the left/right shielding plate.)

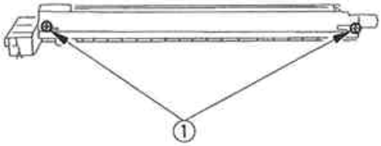


Figure 4-324

2) Remove the wire cleaner.

Caution:
For other assemblies, remove the lid (2 pcs.).

3) Free a length of about 5 cm from a 0.06mm-dia. charging wire reel, and form a loop of about 2 mm in diameter.

Reference:
To form a loop, wind the wire around a hex key once, and twist the hex key three to four times; then, twist the charging wire.

4) Cut the excess end of the twisted charging wire by a nipper or the like.
5) Hook the loop on the stud.

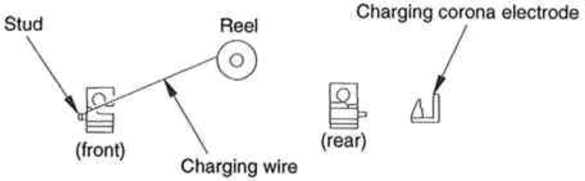


Figure 4-325

6) Hook the charging wire on the charging wire positioner at the rear, and hook the charging wire tension screw on the charging wire where indicated in Figure 4-326; then, twist it.

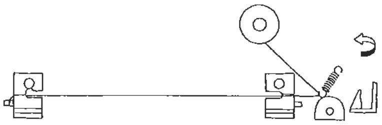


Figure 4-326

7) Cut the excess charging wire with a nipper.
8) Pick the end of the tension spring of the charging wire with tweezers, and hook it on the charging power supply electrode. (In the case of the pre-transfer charging assembly, hook the spring on the pin at the front.)

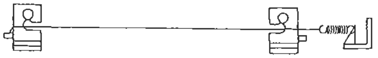


Figure 4-327

Caution:
Make sure of the following:
- The charging wire is not bent or twisted and its gold plating has not peeled.
- The charging wire is in the charging wire positioning V-groove.

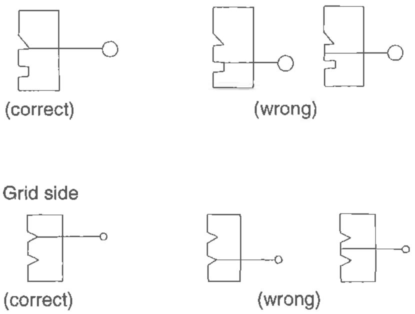


Figure 4-328 Primary Charging Wire

9) Install the cushion to the front of the charging wire. (This does not apply to the primary charging assembly.)
10) Remove the shielding plate (left, right).

Caution:
For other charging assemblies, install the lids (2 pcs.).

11) Install the wire cleaner. (At this time, pay attention to the orientation of the wire cleaner.)
12) Wipe the charging wire with lint-free paper moistened with alcohol.

4. Routing the Grid for the Primary Charging Assembly

1) Loosen the two mounting screws used to fix the shielding plate (left, right).
2) Loosen the three mounting screws used to fix the motor unit in place at the front.

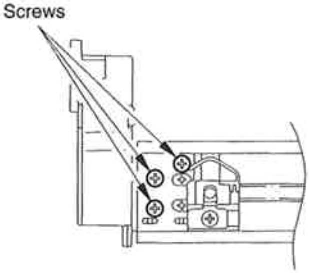


Figure 4-329

3) Loosen the mounting screw, and move it in the direction of the arrow shown in Figure 4-330; then, fix it in place temporarily.

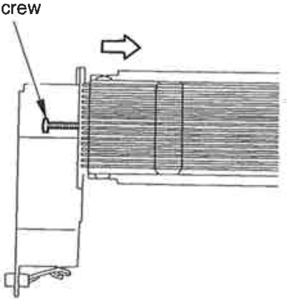


Figure 4-330

4) Free a length of about 5 cm from a 0.1mm-dia. charging wire reel, and form a loop at the end of about 2 mm in diameter.

Reference:

To form a loop, wind the charging wire around the hex key once, turn the hex key three to four times, and twist the wire.

5) Cut the twisted wire (excess) by a nipper.
6) Hook the loop on the stud A shown in Figure 4-331.
7) After having strung the wire for 31 runs, lead it through section B, give it a half turn, and put it between the washer and the motor unit; then, wind it once (clockwise) around the mounting screw, and tighten the mounting screw.

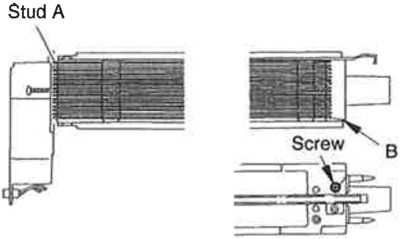


Figure 4-331

8) Cut the excess charging wire with a nipper.
9) Tighten the mounting screw you loosened in step 3).
   Keep tightening the screw until the tension of the grid wire is even.
   Pay attention to avoid deformation of the charging assembly; i.e., try to tighten the mounting screw (front) on the left/right shielding plate.
10) Tighten the mounting screw loosened in steps 1) and 2).

11) Wipe the grid wire with lint-free paper moistened with alcohol.

Caution:
1. Check to make sure that the grid wire is not broken or twisted.
2. Check to make sure that the wire is run at even intervals, i.e., it is in the groove of the block.

5. Adjusting the Height of the Charging Wire

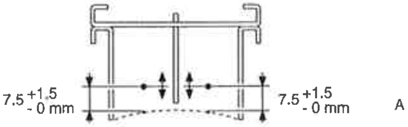
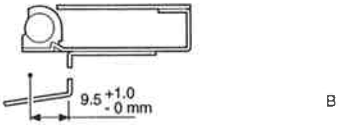
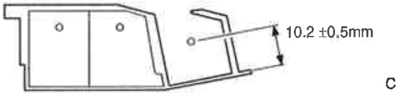
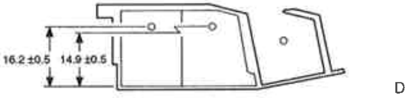
Assembly	Height of charging wire	Range
Primary		± 1mm
Pre-transfer		No adjustment mechanism
Transfer		± 2mm
Separation		± 2mm

Figure 4-332

Reference:
The height (position) of the primary and transfer charging assemblies may be adjusted by turning the screw behind the charging assembly. A full turn changes the position of the charging wire by about 0.7 mm.

6. Cleaning the Primary Charging Assembly Anti-Stray Toner Sheet

1) Open the front doors.
2) Remove the developing assembly.
3) Remove the hopper unit.
4) Remove the process unit.
5) Remove the two screws ①, and remove the blanking exposure rail ②.

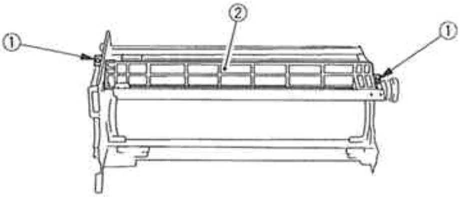


Figure 4-333

6) Clean the primary charging anti-stray toner sheet ③.

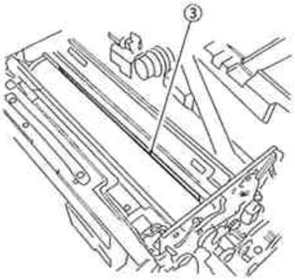


Figure 4-334

K. Developing Assembly

Caution:
The copier's developing assembly is not equipped with a protection cover, requiring you to be careful not to damage the developing assembly after removing the developing assembly.
Be sure not to install the developing locking assembly if the developing assembly is not set in the copier. The toner collecting in the path from the hopper to the developing assembly could move astray because of the vibration occurring during inspection/ repair work.

1. Removing from the Developing Assembly

1) Open the multifeeder door, and remove the mounting screw; then, remove the door stopper tape.
2) Remove the mounting screw ①, and push the developing locking assembly ② in the direction of the arrow to remove.

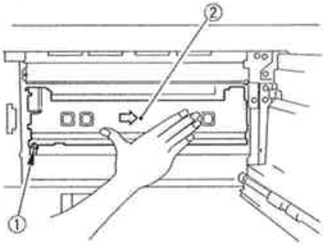


Figure 4-335

3) Disconnect the connector ③, and pull out the developing assembly ④ carefully from the copier.

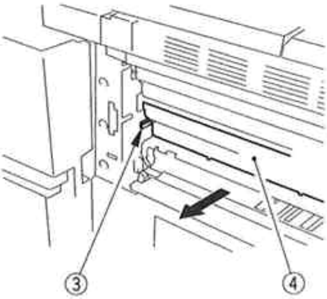


Figure 4-336

2. Removing the Blade Unit

1) Remove the developing assembly from the copier.
2) Remove the two mounting screws ①, and remove the developing assembly cover ②.

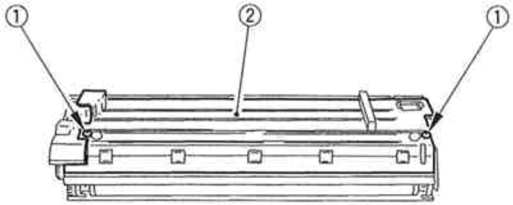


Figure 4-337

3) Place a newspaper on the floor or a desk, and pour out the toner from the developing assembly.
4) Remove the two mounting screws ③, and remove the blade unit ④ together with the mounting plate.

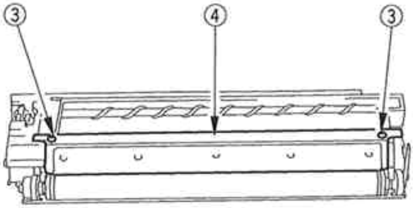


Figure 4-338

Caution:
The blade must be installed with high precision. Do not remove the blade on its own in the field.
Be sure to remove it together with its mount.

3. Installing the Blade

Install the blade by reversing the steps used to remove it with the following in mind:

1) Butt the blade mount against the developing assembly, and tighten the two mounting screws.
To protect the developing cylinder, put copy paper on the cylinder before installing the blade.

4. Removing the Developing Cylinder and the Magnetic Seal

1) Remove the developing assembly from the copier.
2) Remove the blade unit.
3) Remove the two mounting screws ①, and remove the gear unit ② together with the gear.

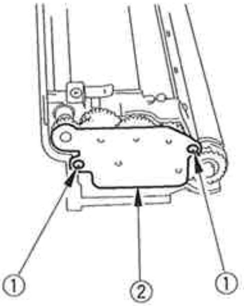


Figure 4-339

Caution:

When removing the gear unit, be careful of the gear attached to the screw, as it will become free.

4) Remove the grip ring ③ attached to the cylinder shaft at the rear, and remove the gear ④, parallel pin ⑤, and butting roll ⑥.

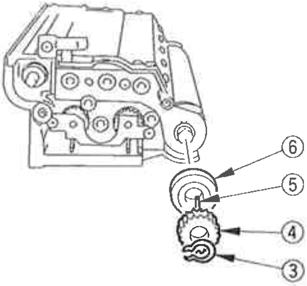


Figure 4-340

5) Remove the two mounting screws ⑦, and remove the electrode plate.

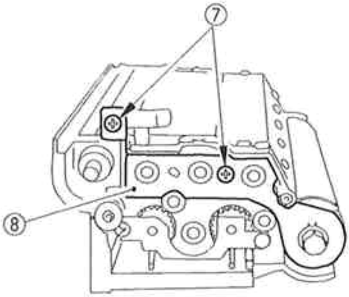


Figure 4-341

6) Remove the mounting screw ⑨, and remove the magnetic positioning plate ⑩.

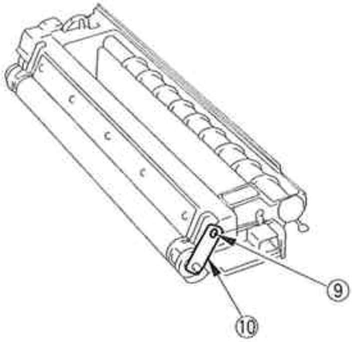


Figure 4-342

7) Remove the grip ring ⑪ from the cylinder shaft at the front, and remove the butting roll ⑫.

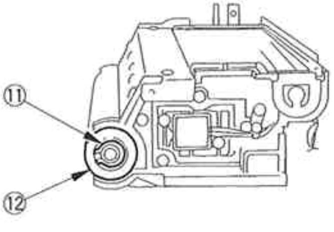


Figure 4-343

8) Remove the two mounting screws ⑬, and remove the blade ⑭ together with the mount.

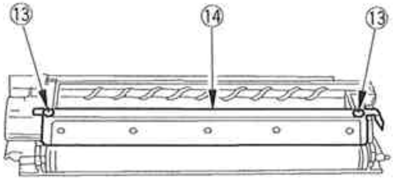


Figure 4-344

9) Remove the bearing ⑮ at the front and the rear, and remove the developing cylinder ⑯.

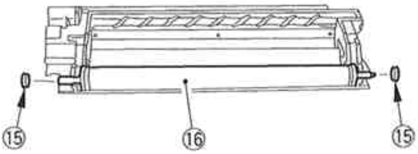


Figure 4-345

Caution:

Do not leave fingerprints or oil on the surface of the developing cylinder. If necessary, dry wipe it with lint-free paper. (Do not use solvent.)

5. Cleaning the Developing Assembly Anti-Stray Toner Sheet

1) Remove the developing assembly, and clean the developing assembly anti-toner stray sheet ①.

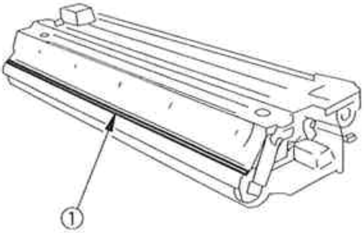


Figure 4-346

L. Hopper Assembly

1. Removing the Hopper Assembly

1) Remove the developing assembly from the copier. (See p. 4-55.)
2) Slide out the hopper assembly to the front. (See p. 7-16.)
3) Remove the mounting screw ①, and remove the hopper assembly ②.

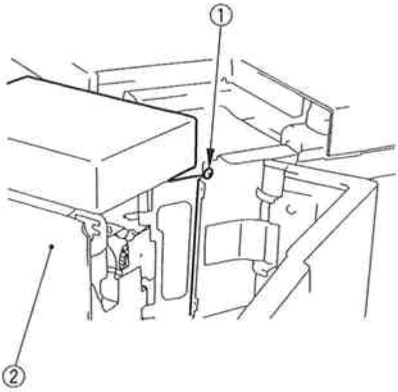


Figure 4-347

M. Drum Cleaner

1. Construction

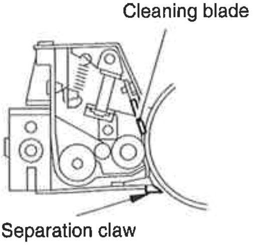


Figure 4-348

2. Removing the Cleaning Blade

1) Slide out the process unit from the copier. (See p. 7-17.)
2) Disconnect the connector ① of the drum heater AC line.
3) Remove the four mounting screws ②, and remove the cleaning blade assembly ③.

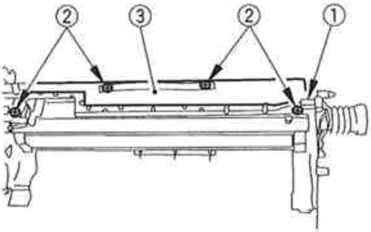


Figure 4-349

4) Remove the E-ring ④, and remove the pressure spring ⑤.

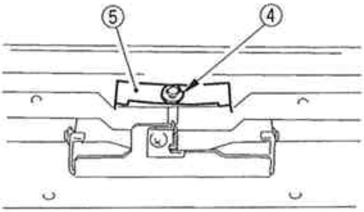


Figure 4-350

5) Loosen the five mounting screws ⑥, and remove the cleaning blade from the blade support plate.

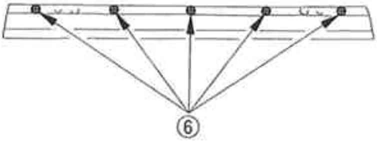


Figure 4-351

3. Installing the Cleaning Blade

Install the cleaning blade by reversing the steps used to remove it.

1) Push in the cleaning blade ① until it butts against the rear.

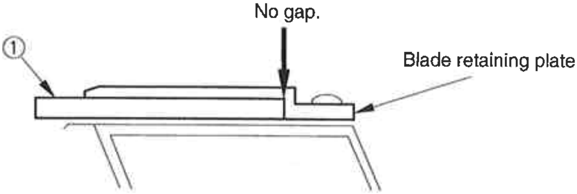


Figure 4-352

2) Lightly tighten the five mounting screws ②; then, temporarily fix them in place where resistance is felt.
3) Fully tighten the screws temporarily tightened in step 2) by turning them 20° to 30° in the order indicated.

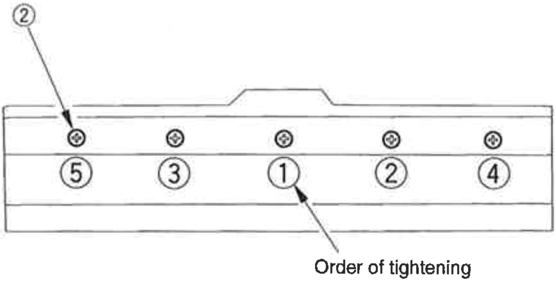


Figure 4-353

Caution:

After installing the cleaning blade, check to make sure that its edge is not appreciably wavy. In addition, be sure to clean the blade before installation, as toner or dirt can cause it to become wavy.

4. Installing the Side Seal

1) Install the side seal ① on the inner side of the cleaner housing where indicated (both ends) while taking care so that it is not displaced outside the edge.

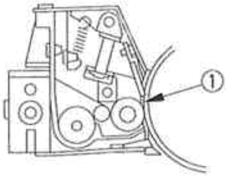


Figure 4-354

5. Cleaning the Cleaning Side Scraper

Perform the following when replacing the cleaner blade (every 500,000 copies).

1) Remove the cleaning blade.
2) Remove any paper lint collecting at the tip of the side scraper (between the magnet roller and the toner guide roller;Ⓐ) with tweezers.
3) Remove the toner coated on the magnet roll surface. (Use a sheet of copy paper bent in the form of the letter U.)

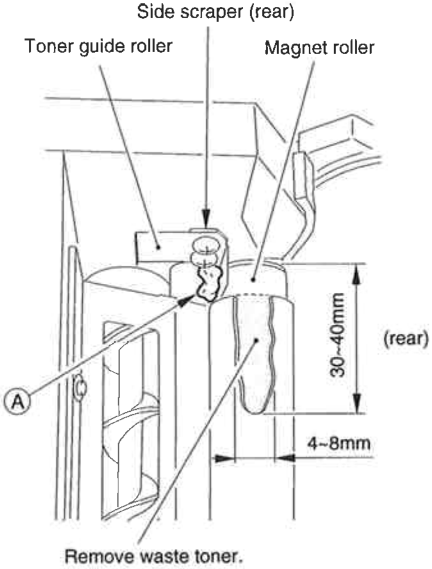

Side scraper (rear)
Toner guide roller
Magnet roller
30~40mm
(rear)
4~8mm
Ⓐ
Remove waste toner.

Figure 4-355a

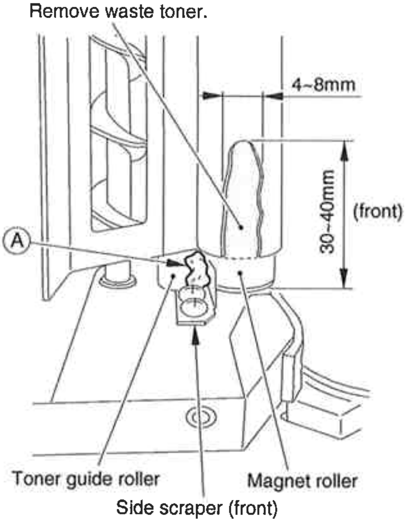

Remove waste toner.
4~8mm
30~40mm
(front)
A
Toner guide roller
Magnet roller
Side scraper (front)

Figure 4-355b

4) Turn the magnet roller clockwise (while viewing it from the front).
5) If a coating has developed once again in the area from which waste toner was removed in step 3), repeat steps 3) through 5).

N. Separation Claw/Separation Claw Drive Assembly

1. Removing the Separation Claw/Separation Drive Assembly from the Drum Unit

1) Remove the process unit from the copier. (See p. 7-17.)
2) Remove the screw ①, and remove the No. 2 heat insulting plate ②.
3) Remove the screw ③, and remove the claw holder ④.

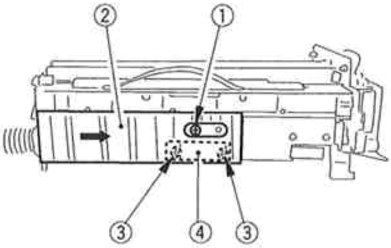


Figure 4-356

Caution:

1. Take care not to bend the separation claw.
2. Take care not to damage the photosensitive drum.

O. Waste Toner Feeding Assembly

1) Slide out the process unit and the fixing/feeding unit from the copier. (See p. 7-17, p. 5-82.)
2) Remove the rear cover.
3) Remove the cleaner fan and the feeding fan. (See p. 7-30.)
4) Remove the high-voltage transformer PCB.
5) Remove the waste toner drive assembly together with the waste toner feeding assembly.
6) Remove the mounting screw ①, and remove the waste toner feeding screw locking sensor ②.

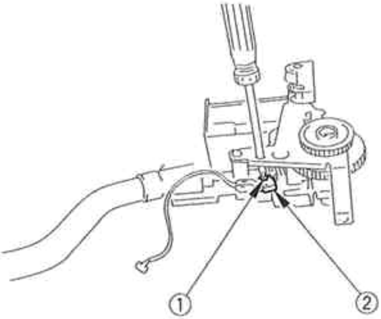


Figure 4-357

7) Remove the two mounting screws ④, and remove the waste toner feeding assembly ⑤ from the waste toner drive assembly.

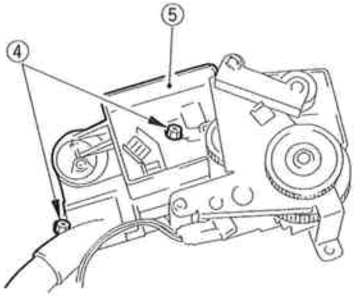


Figure 4-358

CHAPTER 5

PICK-UP/FEEDING SYSTEM

This chapter explains the principles used from when copy paper is picked up to when a copy is delivered in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.

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I. PICK-UP/FEEDING SYSTEM

A. Outline

The copier uses center reference, in which copy paper is moved along the center of the pick-up/feeding path, thereby ensuring stable pick-up feeding operations.

The pick-up system consists of the paper deck, cassettes, and multifeeder assembly; in addition, the system includes the holding tray assembly and the holding tray feeding assembly for making two-sided/overlay copies.

The feeding system has two feeding paths: for one-sided copies and for two-sided/overlay copies (through the holding tray assembly and the holding tray feeding assembly), and the paths are separated by a delivery paper deflecting plate.

When making a one-sided copy, the copy paper picked up from the cassette, paper deck, or multifeeder is controlled by the registration roller so that its leading edge matches the leading edge of the image on the photosensitive drum; then, the paper is forwarded to the copy tray through the transfer, separation, feeding, fixing, and delivery assembly.

When making two-sided/overlay copies, on the other hand, the paper is stacked on the holding tray after fixing on the first side. Then, it is picked up from the holding tray for copying on the second side; it moves through the holding tray feeding assembly and is sent to the copy tray through the same path as one-sided copies.

As many as 17 sensors are used to monitor the movement of copy paper; see Figure 5-101 for the arrangement of these sensors.

Sensor No.	Name	Sensor No.	Name
PS8	Holding tray feeding assembly 1 paper sensor	PS24	Pick-up vertical path 0 paper sensor
PS9	Holding tray feeding assembly 2 paper sensor	PS27	Pick-up vertical path 3 paper sensor
PS10	External delivery sensor	PS30	Pick-up vertical path 4 paper sensor
PS12	Internal delivery sensor (reversing assembly)	PS33	Pick-up vertical path 1 paper sensor
PS14	Holding tray registration paper sensor	PS36	Pick-up vertical path 2 paper sensor
PS15	Holding tray inlet paper sensor	PS47	Fixing assembly outlet paper sensor
PS17	Holding tray pick-up sensor	PS49	Left deck outlet paper sensor
PS22	Multifeeder pick-up sensor	PS52	Claw jam sensor
PS23	Registration paper sensor		

Table 5-101

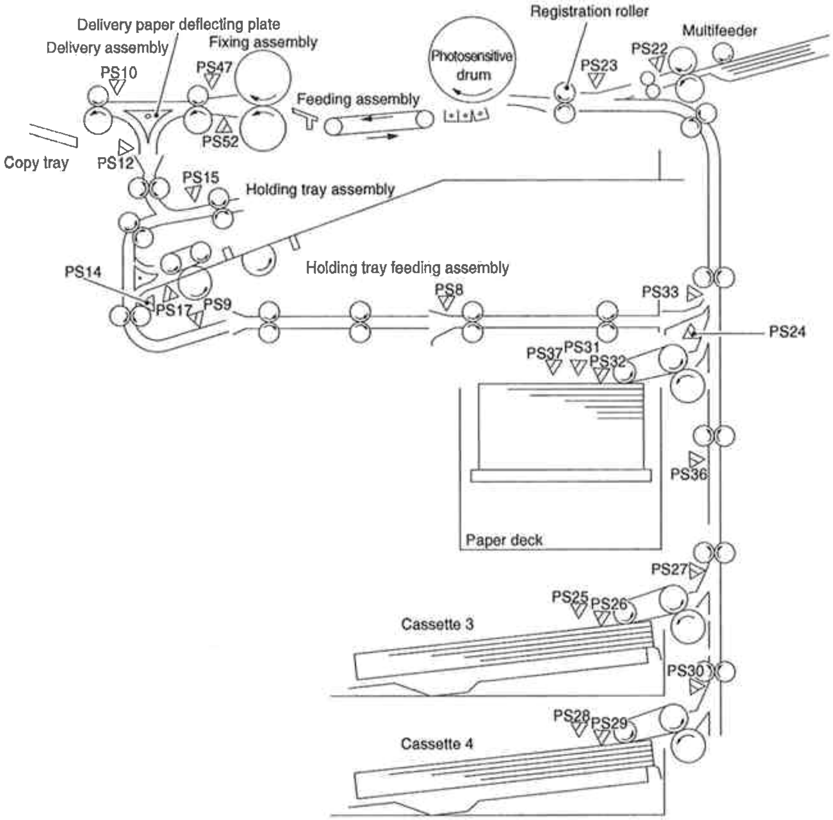

Delivery paper deflecting plate
Delivery assembly
Fixing assembly
PS10
PS47
PS52
Feeding assembly
Photosensitive drum
Registration roller
Multifeeder
PS22
PS23
Copy tray
PS12
PS15
Holding tray assembly
Holding tray feeding assembly
PS14
PS17
PS9
PS8
PS33
PS24
PS37
PS31
PS32
PS36
Paper deck
PS27
PS25
PS26
Cassette 3
PS30
PS28
PS29
Cassette 4

Figure 5-101

II. PICK-UP FROM THE CASSETTE

A. Pick-Up Operation

See Figure 5-201 for an idea of how cassette pick-up operations are controlled.

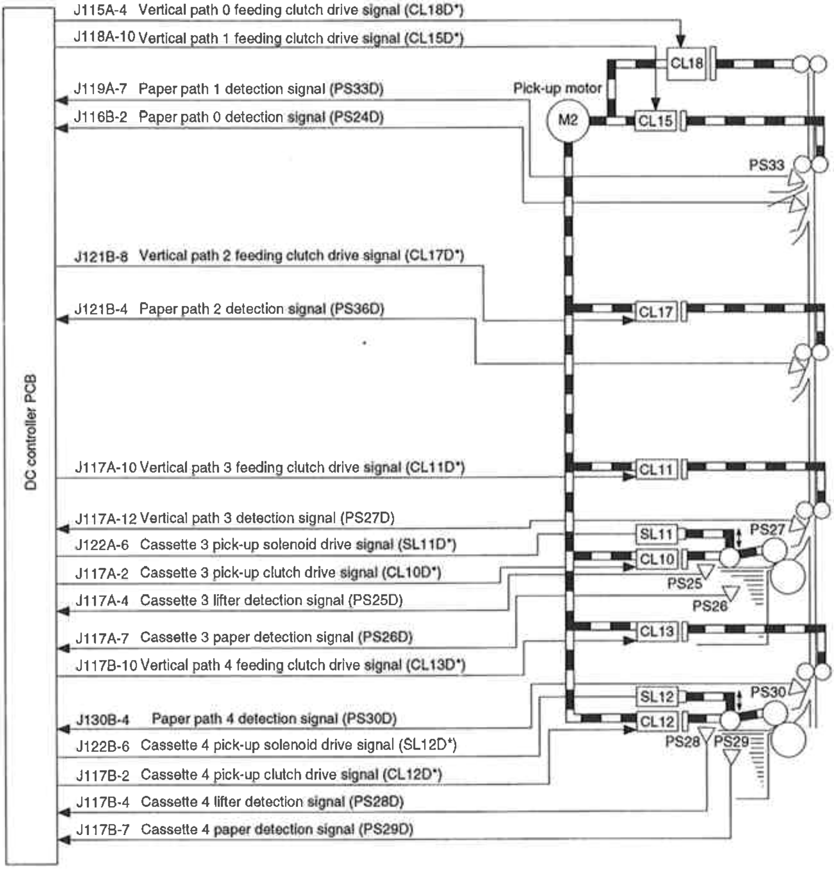

DC controller PCB
J115A-4 Vertical path 0 feeding clutch drive signal (CL18D*)
J118A-10 Vertical path 1 feeding clutch drive signal (CL15D*)
J119A-7 Paper path 1 detection signal (PS33D)
J116B-2 Paper path 0 detection signal (PS24D)
J121B-8 Vertical path 2 feeding clutch drive signal (CL17D*)
J121B-4 Paper path 2 detection signal (PS36D)
J117A-10 Vertical path 3 feeding clutch drive signal (CL11D*)
J117A-12 Vertical path 3 detection signal (PS27D)
J122A-6 Cassette 3 pick-up solenoid drive signal (SL11D*)
J117A-2 Cassette 3 pick-up clutch drive signal (CL10D*)
J117A-4 Cassette 3 lifter detection signal (PS25D)
J117A-7 Cassette 3 paper detection signal (PS26D)
J117B-10 Vertical path 4 feeding clutch drive signal (CL13D*)
J130B-4 Paper path 4 detection signal (PS30D)
J122B-6 Cassette 4 pick-up solenoid drive signal (SL12D*)
J117B-2 Cassette 4 pick-up clutch drive signal (CL12D*)
J117B-4 Cassette 4 lifter detection signal (PS28D)
J117B-7 Cassette 4 paper detection signal (PS29D)
Pick-up motor
M2
CL18
CL15
PS33
CL17
CL11
SL11
CL10
PS27
PS25
PS26
CL13
SL12
CL12
PS30
PS28
PS29

Figure 5-201

1. Outline

The copy paper inside the cassette is lifted by the lifter so that it remains in contact with the pick-up roller.

When the pick-up clutch (CL10, CL12) turns ON, the pick-up roller rotates to pick-up copy paper. Then, the pick-up roller releasing solenoid (SL11, SL12) turns ON so that the pick-up roller leaves the paper.

The copy paper then reaches the feeding roller and the separation roller, which serves to make sure that only one sheet of copy paper is fed forward; then, the vertical path roller operates to send the copy paper to the registration roller.

The registration roller serves to control the copy paper so that its leading edge and the leading edge of the image on the photosensitive drum match.

2. Sequence of Pick-Up Operations

- Cassette 3, A4, 2 Copies, Continuous

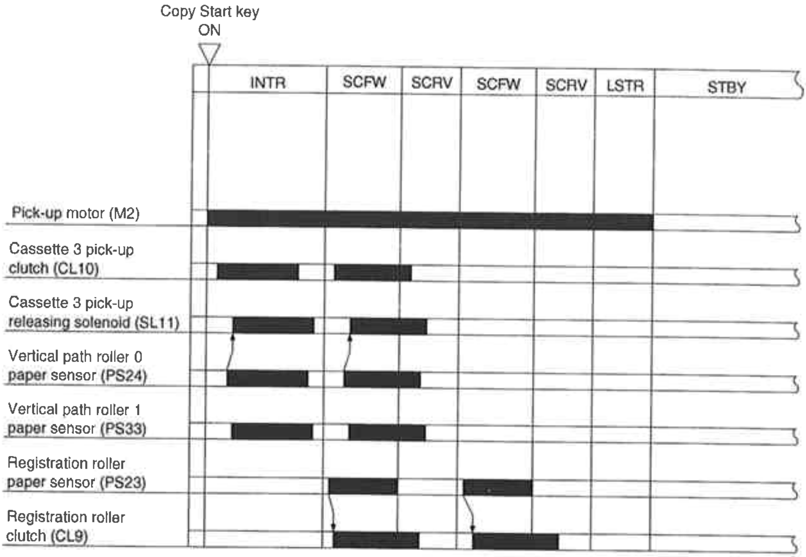


Figure 5-202

B. Cassette Lifter Operations

The lifter inside the cassette is designed so that the pick-up roller lowers when the cassette is pushed inside the copier, causing the lifter position sensor (P25, PS28) to leave the light-blocking plate. This condition turns ON the lifter motor (M14, M15) to move up the lifter. The lifter motor stops where the lifter position sensor (PS25, PS28) can detect the top surface of the stack of copy paper on the lifter.

When copy paper runs out and the paper detecting lever leaves the paper sensor (PS26, PS29), the message Add Paper is indicated on the control panel.

The light-blocking plate leaves the cassette open/closed sensor 3/4 (PS50/PS51) when the grip of the cassette is held, lowering the lifter.

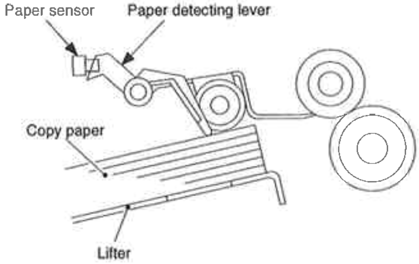

Paper sensor
Paper detecting lever
Copy paper
Lifter

Figure 5-203 (paper present)

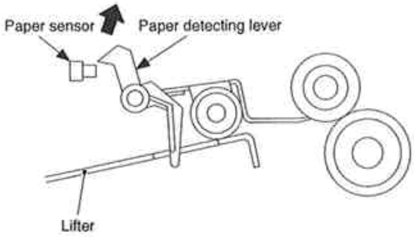

Paper sensor
Paper detecting lever
Lifter

Figure 5-204 (paper absent)

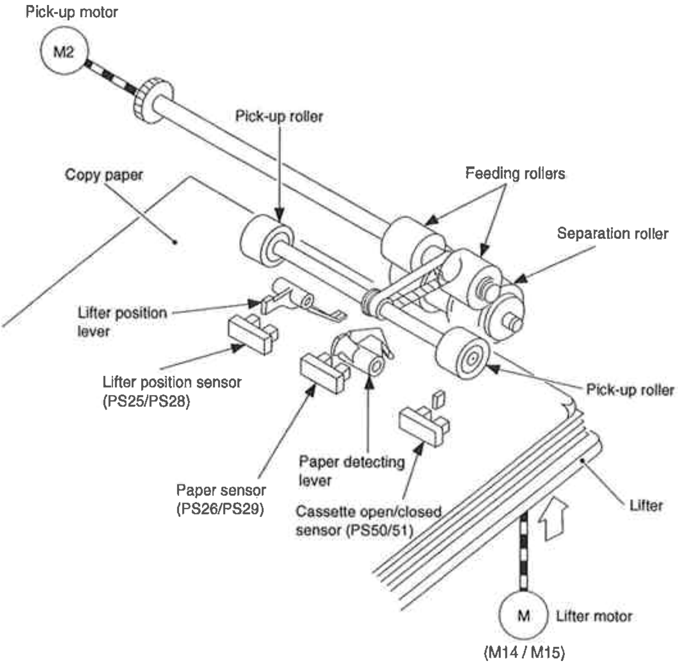

Pick-up motor
M2
Pick-up roller
Copy paper
Feeding rollers
Separation roller
Lifter position lever
Lifter position sensor (PS25/PS28)
Pick-up roller
Paper detecting lever
Paper sensor (PS26/PS29)
Cassette open/closed sensor (PS50/51)
Lifter
M
Lifter motor
(M14 / M15)

Figure 5-205

C. Detecting the Size of Copy Paper in the Cassette

1. Outline

The size of the copy paper inside the cassette is detected by the paper size sensor installed to the rear of the cassette holder.

When the cassette is slid into the cassette holder, the paper size sensor is pushed by the boss on the cassette, enabling the identification of the width and the length of the copy paper.

The copier identifies the paper size in relation to the combination of paper width and length and, at the same time, determines the point at which the scanner is reversed and how to control blank exposure.

The boss on the cassette used to press the paper size sensor operates in conjunction with the guide plate inside the cassette, and its position is determined when the guide plate is adjusted to the paper size.

2. Detecting the Size of Paper

The copy paper length sensor consists of two photointerrupters, and the outputs of these two photointerrupters are used to identify the length of paper.

The copy paper width sensor, on the other hand, is a variable resistor, and its output (resistance) is used to determine the width of paper.

Figure 5-206 shows the relationship between paper widths and outputs of the variable resistors. To ensure that the relationship is maintained, it is important that you register the paper width basic value whenever you have replaced the DC controller PCB. (See “Registering Paper Width Basic Value” on p. 10-53.)

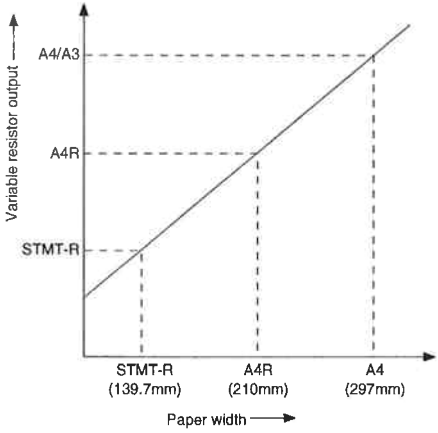


Figure 5-206

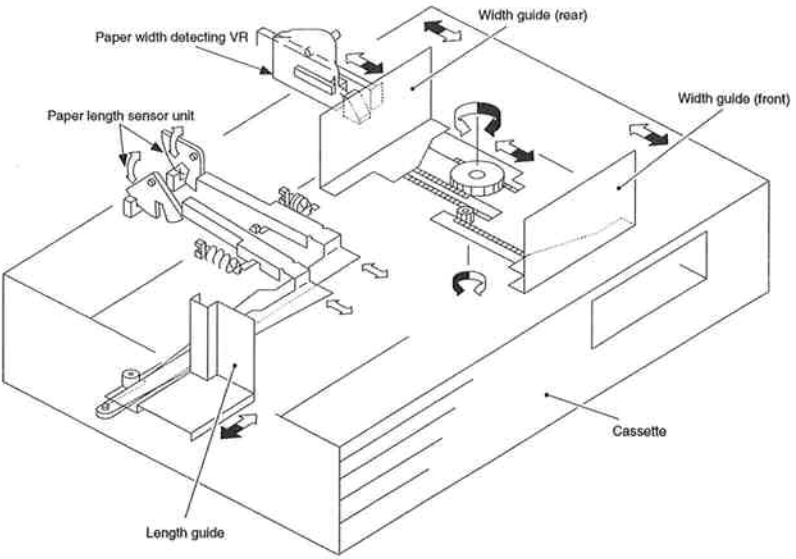

Width guide (rear)
Paper width detecting VR
Width guide (front)
Paper length sensor unit
Cassette
Length guide

Figure 5-207

3. Markings on the Width Guide Rail

The width guide rail inside the cassette has paper size positioning holes marked A through M as shown in Table 5-201.

Make use of these holes if the user reports such problems as skew pick-up to make sure if the specified width is the actual width of the copy paper being used. (This information is not disclosed to the user.)

Marking	Paper name	Remarks
A	STMT-R	
B	A5-R	
C	B5-R	
D	KLGL-R	
E	GLTR-R	
F	G-LGL	G3
G	A4-R	
H	LGL/LTR-R	
I	FLSC	G2
J	B4/B5	
K	G-LTR	G1
L	11" × 17"/LTR	G5
M	A3/A4	

Table 5-201

4. Paper Sizes

The microprocessor on the DC controller PCB identifies the size of paper according to the following table.

The paper sizes in Table 5-203 are specified in service mode selected in relation to each group.

(The asterisk indicates the paper size specified at time of shipment.)

Paper length sensor	PS102/ PS104	PS101/ PS103	PS102/ PS104	PS101/ PS103	PS102/ PS104	PS101/ PS103	PS102/ PS104	PS101/ PS103
Signal name	SZ 2	SZ 1	SZ 2	SZ 1	SZ 2	SZ 1	SZ 2	SZ 1
Paper width sensor (slice level) unit: mm / ON/OFF	0	0	0	1	1	0	1	1
	A4		—		A3		—	
288.5								
	(G4)		—		11" × 17"		—	
273.7								
	(G1)		—		—		—	
261.8								
	B5		—		B4		—	
238.0								
	STMT		LTRR		LGL		(G2)	
212.9								
	A5		A4R		—		(G3)	
206.6								
	G-LTRR		—		—			
196.6								
	K-LGLR		—		—		—	
186.0								
	B5R		—		—		—	
165.2								
	A5R		—		—		—	
144.1								
	STMTR		—		—		—	

Table 5-202

Group		Size
G1	*	G-LTR K-LGL
G2	*	FOOLSCAP OFFICIO E-OFFI A-LGL A-OFFI
G3	*	G-LGL FOLIO AUS-FLS
G5	*	LTR A-LTR

Table 5-203

- Paper Types

Description	Summary	Size (length × width mm)
A3	A3	(297±1) × (420±1)
A4R	A4R	(210±1) × (297±1)
A4	A4	(297±1) × (210±1)
A5	A5	(210±1) × (148.5±1)
A5R	A5R	(148.5±1) × (210±1)
B4	B4	(257±1) × (364±1)
B5R	B5R	(182±1) × (257±1)
B5	B5	(257±1) × (182±1)
11" × 17"	11 × 17	(279±1) × (432±1)
LETTER-R	LTRR	(216±1) × (297±1)
LETTER	LTR	(297±1) × (216±1)
STATEMENT	STMT	(216±1) × (139.5±1)
STATEMENT R	STMTR	(139.5±1) × (216±1)
LEGAL	LGL	(216±1) × (356±1)
KOREAN LEGAL	K-LGL	(265±1) × (190±1)
KOREAN LEGAL R	K-LGLR	(190±1) × (265±1)
FOOLSCAP	FLSC	(216±1) × (330±1)
AUSTRALIAN FOOLSCAP	A-FLS	(206±1) × (337±1)
OFICIO	OFI	(216±1) × (317±1)
ECUADORAN OFICIO	E-OFI	(220±1) × (320±1)
BOLIVIA	B-OFI OFICIO	(216±1) × (355±1)
ARGENTINE LETTER	A-LTR	(280±1) × (220±1)
ARGENTINE LETTER-R	A-LTRR	(220±1) × (280±1)
GOVERNMENT LETTER	G-LTR	(267±1) × (203±1)
GOVERNMENT LETTER-R	G-LTRR	(203±1) × (267±1)
ARGENTINE LEGAL	A-LGL	(220±1) × (340±1)
GOVERNMENT LEGAL	G-LGL	(203±1) × (330±1)
FOLIO	FOLI	(216±1) × (317±1)
ARGENTINE OFFICIO	A-OFI	(220±1) × (340±1)

Table 5-204

5. Registering Paper Width Basic Value

See p. 10-53.

III. PICK-UP FROM THE PAPER DECK

A. Outline

The paper deck picks up and feeds paper by operating various loads in response to the instructions from the DC controller PCB.

The loads used to pick up and feed paper and move up the lifter are driven by the pick-up motor.

The service person is expected to register the new size in service mode whenever the deck size has been changed.

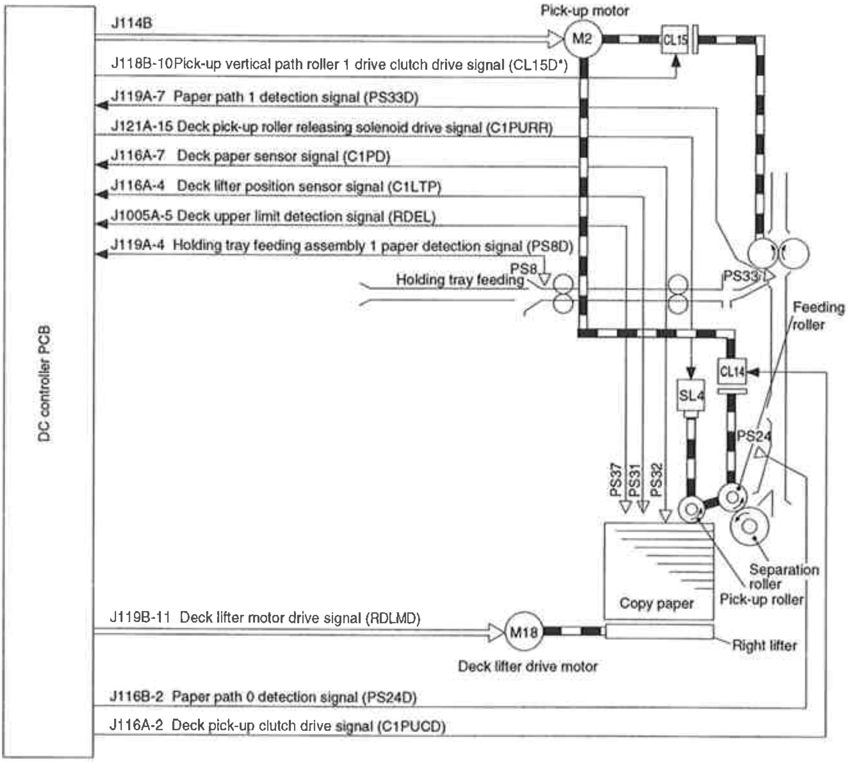

DC controller PCB
Pick-up motor
J114B
M2
CL15
J118B-10Pick-up vertical path roller 1 drive clutch drive signal (CL15D*)
J119A-7 Paper path 1 detection signal (PS33D)
J121A-15 Deck pick-up roller releasing solenoid drive signal (C1PURR)
J116A-7 Deck paper sensor signal (C1PD)
J116A-4 Deck lifter position sensor signal (C1LTP)
J1005A-5 Deck upper limit detection signal (RDEL)
J119A-4 Holding tray feeding assembly 1 paper detection signal (PS8D)
PS8
Holding tray feeding
PS33
Feeding roller
CL14
SL4
PS24
PS37
PS31
PS32
Separation roller
Pick-up roller
Copy paper
J119B-11 Deck lifter motor drive signal (RDLMD)
M18
Deck lifter drive motor
Right lifter
J116B-2 Paper path 0 detection signal (PS24D)
J116A-2 Deck pick-up clutch drive signal (C1PUCD)

Figure 5-301

1. Pick-Up Operations

The copy paper inside the deck is lifted by the lifter so that the copy paper remains in contact with the pick-up roller.

When the deck pick-up clutch (CL14) turns ON, the pick-up roller rotates to pick up copy paper. Then, the deck pick-up roller releasing solenoid (SL4) turns ON so that the pick-up roller leaves the surface of the paper.

Thereafter, copy paper reaches the feeding roller and the separation roller, which make sure that only one sheet is forwarded to the feeding path. Then, the vertical path roller operates to feed the copy paper as far as the registration roller.

The registration roller serves to make sure that the leading edge of the copy paper matches the leading edge of the image on the photosensitive drum.

2. Sequence of Pick-Up Operations

- Paper Deck, A4, 2 Copies

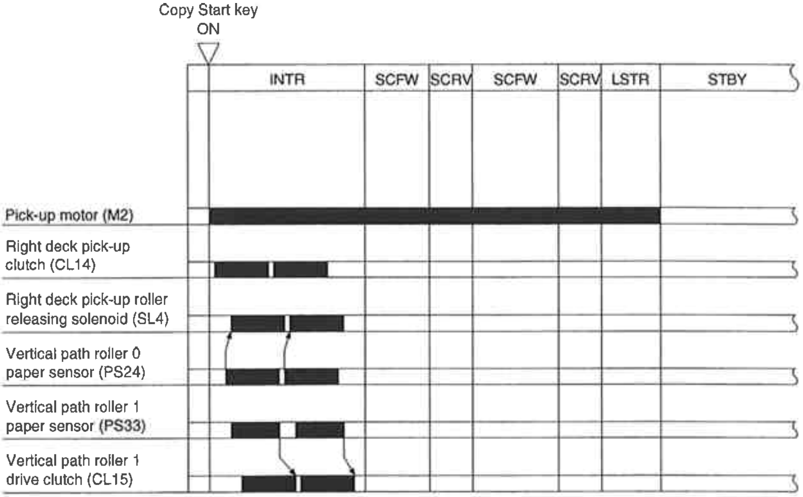


Figure 5-302

B. Lifter Operations

1. Operations

When the deck is pushed inside the pedestal, the deck open/closed sensor (PS38) turns ON and, at the same time, the pick-up roller lowers, causing the deck lifter position sensor (PS31) to leave the light-blocking plate.

This condition turns ON the lifter drive motor (M18), and the drive of the pick-up motor (M2) is transmitted to the cable take-up shaft to move up the lifter.

The lifter stops where the deck lifter position sensor (PS31) can detect the top surface of the copy paper on the lifter.

A deck lifter limit sensor (PS37) is located in consideration of such cases in which the ascent fails to stop even after the sensor arm has blocked the deck lifter position sensor (PS31).

After it has moved up, the lifter is held in place by the work of gears.

When the deck is slid out from the copier, the cable take-up gear disengages itself, allowing the lifter to move down on its own weight.

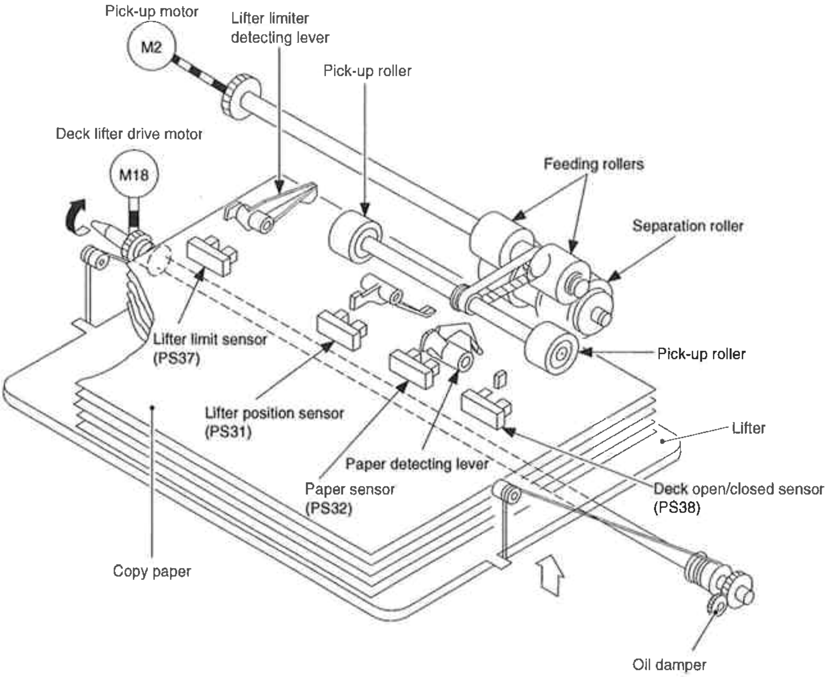
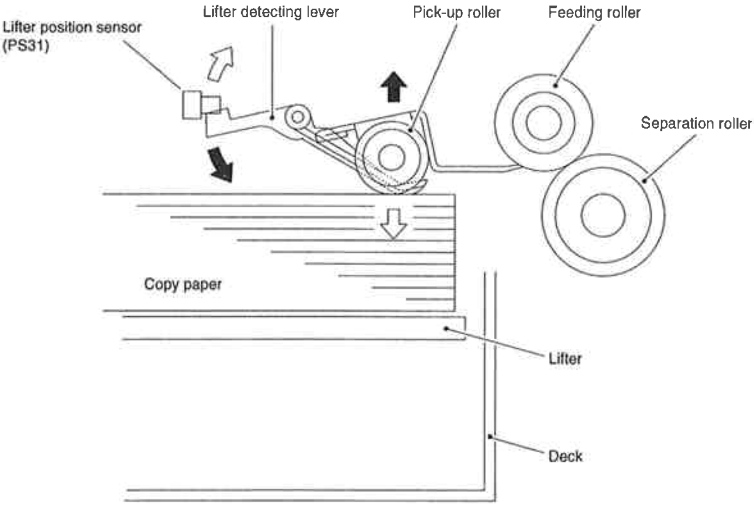

Pick-up motor
M2
Lifter limiter detecting lever
Pick-up roller
Deck lifter drive motor
M18
Feeding rollers
Separation roller
Lifter limit sensor (PS37)
Pick-up roller
Lifter position sensor (PS31)
Lifter
Paper detecting lever
Paper sensor (PS32)
Deck open/closed sensor (PS38)
Copy paper
Oil damper

Figure 5-303


Lifter position sensor (PS31)
Lifter detecting lever
Pick-up roller
Feeding roller
Separation roller
Copy paper
Lifter
Deck

⬅: Pick-up roller up; i.e., the light-blocking plate of the lifter detecting lever lowers, blocking the lifter position sensor (PS31).

⇦: Pick-up roller down; i.e., the light-blocking plate of the lifter detecting lever moves up, leaving the lifter position sensor (PS31).

Figure 5-304

2. Deck Limit Detection

When the deck reaches the lifter position sensor (PS31), the deck lifter position detection signal is sent to the DC microprocessor of the DC controller PCB, which in response will stop the deck lifter drive motor (M18). The deck limit sensor (PS37) is used in consideration of such faults as in which the clutch fails to stop.

When the deck limit sensor (PS37) detects the deck, the deck limit signal is sent to the limit detection circuit of the DC controller PCB, causing the deck drive signal from the microprocessor to be cut off. (Figure 5-305)

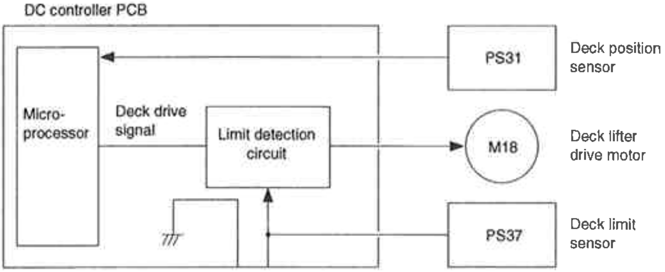

DC controller PCB
Micro-processor
Deck drive signal
Limit detection circuit
PS31
Deck position sensor
M18
Deck lifter drive motor
PS37
Deck limit sensor

Figure 5-305 Deck Limit Detection (2-cassette + paper deck)

C. Detecting Paper for the Deck

1. Detecting the Presence/Absence of Paper

The presence/absence of paper inside the deck is detected by the deck paper sensor (PS32).

When the deck runs out of copy paper, the paper detecting lever leaves the deck paper sensor (PS32), indicating the absence of paper.

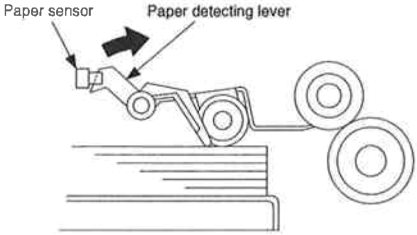


Figure 5-306 (paper present)

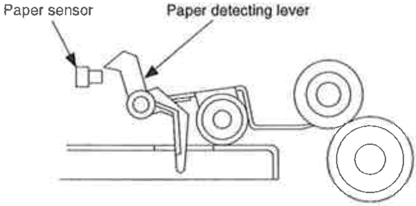


Figure 5-307 (paper absent)

2. Detecting the Deck Size

The service person is expected to register the deck size in service mode.

D. High-Speed Pick-Up

When paper is picked up from the paper deck, the pick-up motor (M2) rotates at a high speed to speed up first copy time, and such rotation applies to the following:

- From when the first sheet has reached the path sensor (PS24) until it reaches the registration roller to form an arch.
  The high-speed rotation refers to a rotation made at about twice the speed of normal rotation.

IV. PICK-UP FROM THE MULTIFEEDER

A. Pick-Up Operation

The presence of paper in the multifeeder is checked by the multifeeder paper sensor (PS22). When the multifeeder is selected as the source of paper and, in addition, paper is present in the multifeeder, the multifeeder pick-up clutch (CL7) and the multifeeder pick-up relay solenoid (SL15) turn ON in response to a press on the Copy Start key, causing the pick-up roller, feeding roller, separation roller, and holding roller to rotate.

The multifeeder pick-up solenoid (SL1) turns ON in the direction of pick-up, lowering the rotating pick-up roller on the copy paper and ultimately feeding the copy paper inside the machine. When the first sheet has been picked up, the pick-up roller pick-up solenoid turns ON in the releasing direction, causing the pick-up roller to leave the copy paper. Thereafter, the multifeeder pick-up solenoid (SL15) turns OFF, and the copy paper is fed by the work of the registration roller and the holding roller.

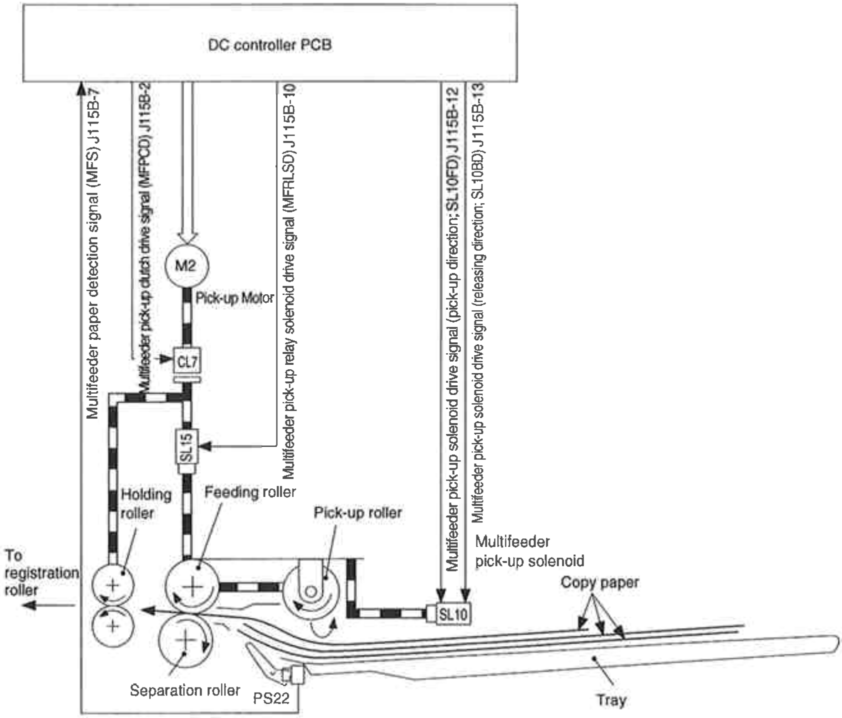

DC controller PCB
Multifeeder paper detection signal (MFS) J115B-7
Multifeeder pick-up clutch drive signal (MFPCD) J115B-2
Multifeeder pick-up relay solenoid drive signal (MFRLSD) J115B-10
Multifeeder pick-up solenoid drive signal (pick-up direction; SL10FD) J115B-12
Multifeeder pick-up solenoid drive signal (releasing direction; SL10BD) J115B-13
M2
Pick-up Motor
CL7
SL15
Holding roller
Feeding roller
Pick-up roller
Multifeeder pick-up solenoid
Copy paper
SL10
To registration roller
Separation roller
PS22
Tray

Figure 5-401

B. Detecting the Size of Paper in the Multifeeder

When the slide guide of the multifeeder is set to suit the paper width, the variable resistor operating in conjunction with the movement of the slide guide generates a specific output, allowing the DC controller to identify the width of the copy paper.

The width identified this way is used to control the lens and blank exposure. The length of paper when the multifeeder is used is identified in relation to how long the pre-registration paper sensor (PS23) remains ON.

You need to enter the paper width basic value whenever you have replaced the paper width detecting variable resistor of the multi feeder (p. 10-53).

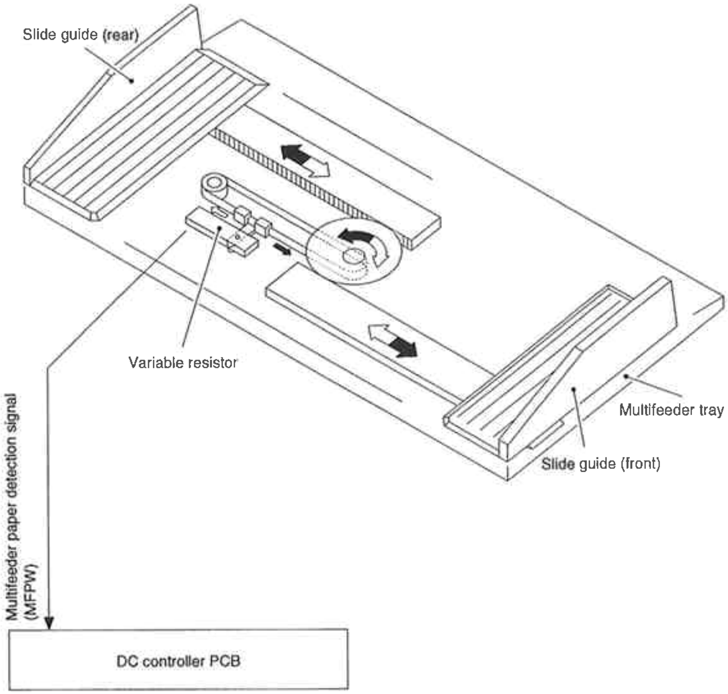

Slide guide (rear)
Variable resistor
Multifeeder tray
Slide guide (front)
Multifeeder paper detection signal (MFPW)
DC controller PCB

Figure 5-402

C. Sequence of Operations (multifeeder)

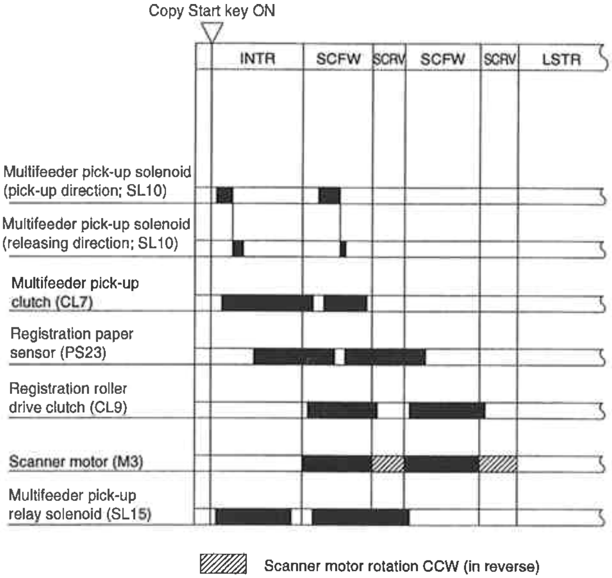

Copy Start key ON
INTR
SCFW
SCRV
SCFW
SCRV
LSTR
Multifeeder pick-up solenoid (pick-up direction; SL10)
Multifeeder pick-up solenoid (releasing direction; SL10)
Multifeeder pick-up clutch (CL7)
Registration paper sensor (PS23)
Registration roller drive clutch (CL9)
Scanner motor (M3)
Multifeeder pick-up relay solenoid (SL15)
Scanner motor rotation CCW (in reverse)

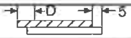
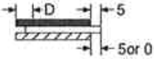
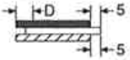
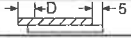
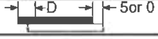
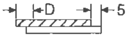
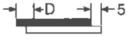
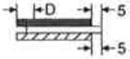
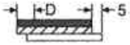
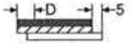
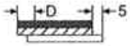
Figure 5-403

V. CONTROLLING THE REGISTRATION CLUTCH

The registration clutch serves to make sure that copy paper and the image on the drum match at a specific point.

In modes other than binding mode, the registration clutch exerts control so that the leading edge of copy paper and that of the image on the drum match.

In binding mode, control is as shown in Figure 5-501 so that a binding margin will be created on the copy.

Selected mode		Copy paper timing	Shift (mm)	Copy paper on copy tray
One-sided originals ▶ One-sided copy		B	May be between 0 and 20 mm; illustrations assume a shift of 5 mm.	
One-sided original ↓ Two-sided copy	Copying on 1st side	A		
	Copying on 2nd side	B		
Two-sided original ↓ Two-sided copy	Copying on 1st side	A		
	Copying on 2nd side	B		
Two-sided original ↓ One-sided copy	Copying on 1st side	B		
	Copying on 2nd side	B		
Page separation ↓ (one-sided copy)	Copying on 1st side (left)	B		
	Copying on 2nd side (right)	B		
Page separation ↓ Two-sided copy	Copying on 1st side (left)	A		
	Copying on 2nd side (right)	B		
One-sided original ↓ Overlay copy	Copying on 1st side	B		
	Copying on 2nd side	B		
Two-sided original ↓ Overlay copy	Copying on 1st side	B		
	Copying on 2nd side	B		
Page separation ↓ Overlay copy	Copying on 1st side (left)	B		
	Copying on 2nd side (right)	B		

▭ Copy paper ▨ Image area for copying on 1st side ■ Image area for copying on 2nd side Area D: Erased by blank exposure

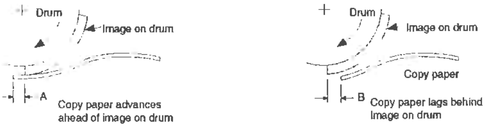

Drum
Image on drum
A
Copy paper advances ahead of image on drum
Drum
Image on drum
Copy paper
B
Copy paper lags behind image on drum

Figure 5-501

VI. MAKING TWO-SIDED/OVERLAY COPIES (1st SIDE)

A. Two-Sided/Overlay Copy Operation

The feeding path for copying on the first side of a two-sided/overlay copy is formed when the delivery paper deflecting plate is lifted by the delivery paper deflecting solenoid (SL2).

The paper deflecting plate is lifted as soon as the registration clutch (CL9) turns ON.

When its first side has been copied, the copy paper is fed to the holding tray by the holding tray inlet roller (CW rotation).

The holding tray swinging solenoid (SL9) and the holding tray (X, Y) motor (M8, M9) help stack copy paper each time a sheet arrives at the holding tray. (See pp. 5-30 and -31.)

When the first sheet is stacked on the holding tray assembly, the holding tray re-pick up roller is rotated to help stacking. The holding tray is capable of supporting up to 50 sheets of copy paper.

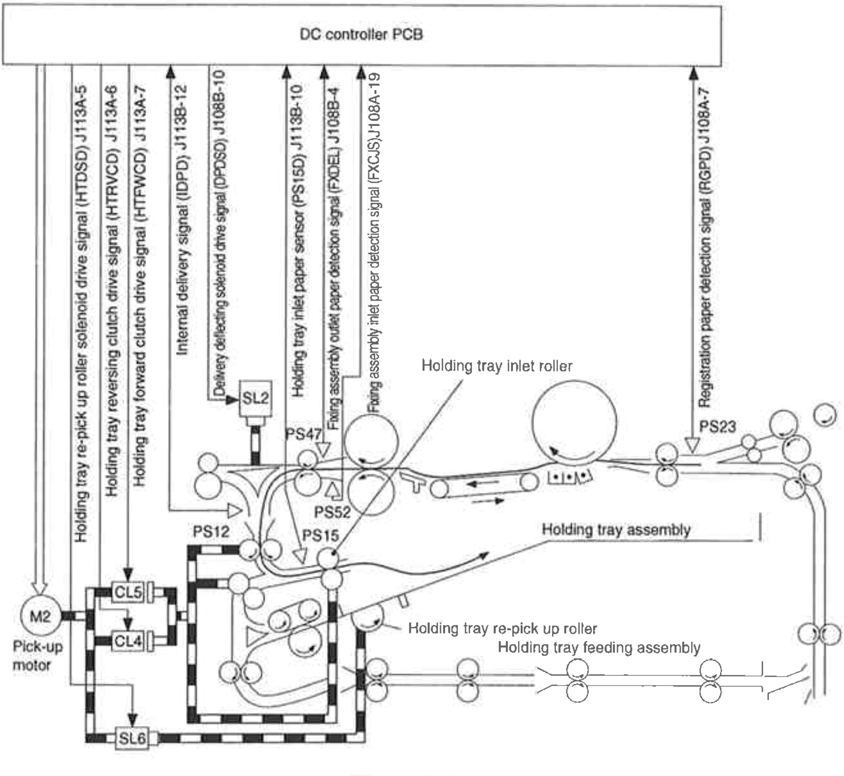

DC controller PCB
Holding tray re-pick up roller solenoid drive signal (HTDSD) J113A-5
Holding tray reversing clutch drive signal (HTRVCD) J113A-6
Holding tray forward clutch drive signal (HTFWCD) J113A-7
Internal delivery signal (IDPD) J113B-12
Delivery deflecting solenoid drive signal (DPDSD) J108B-10
Holding tray inlet paper sensor (PS15D) J113B-10
Fixing assembly outlet paper detection signal (FXDEL) J108B-4
Fixing assembly inlet paper detection signal (FXCJS)J108A-19
Registration paper detection signal (RGPD) J108A-7
SL2
PS47
PS52
PS12
PS15
PS23
Holding tray inlet roller
Holding tray assembly
Holding tray re-pick up roller
Holding tray feeding assembly
CL5
CL4
SL6
M2
Pick-up motor

Figure 5-601

1. Sequence of Operations for Making Two-Sided/Overlay Copies (1st side)

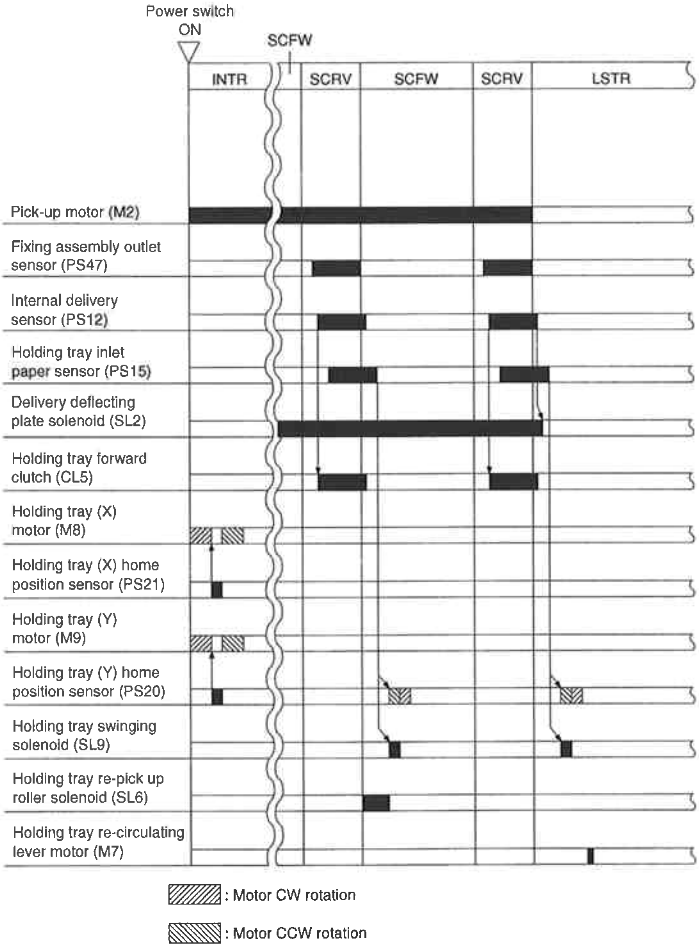

Power switch ON
SCFW
INTR
SCRV
SCFW
SCRV
LSTR
Pick-up motor (M2)
Fixing assembly outlet sensor (PS47)
Internal delivery sensor (PS12)
Holding tray inlet paper sensor (PS15)
Delivery deflecting plate solenoid (SL2)
Holding tray forward clutch (CL5)
Holding tray (X) motor (M8)
Holding tray (X) home position sensor (PS21)
Holding tray (Y) motor (M9)
Holding tray (Y) home position sensor (PS20)
Holding tray swinging solenoid (SL9)
Holding tray re-pick up roller solenoid (SL6)
Holding tray re-circulating lever motor (M7)
▨ : Motor CW rotation
▧ : Motor CCW rotation

Figure 5-602

B. Making Two-Sided Copies (2nd side)

When copying on the second side of a two-sided copy, the copy paper is picked up from the stack on the holding tray.

When the Copy Start key is pressed, the holding tray separation clutch (CL6) and the holding tray re-pick up roller solenoid (SL6) turn ON to feed one sheet of copy paper to the holding tray registration roller.

The copy paper forms an arch when its leading edge butts against the holding tray registration roller and moves ahead to the holding tray feeding assembly when the holding tray registration clutch (CL3) turns ON.

The copy paper then moves through the holding tray feeding assembly to the registration roller.

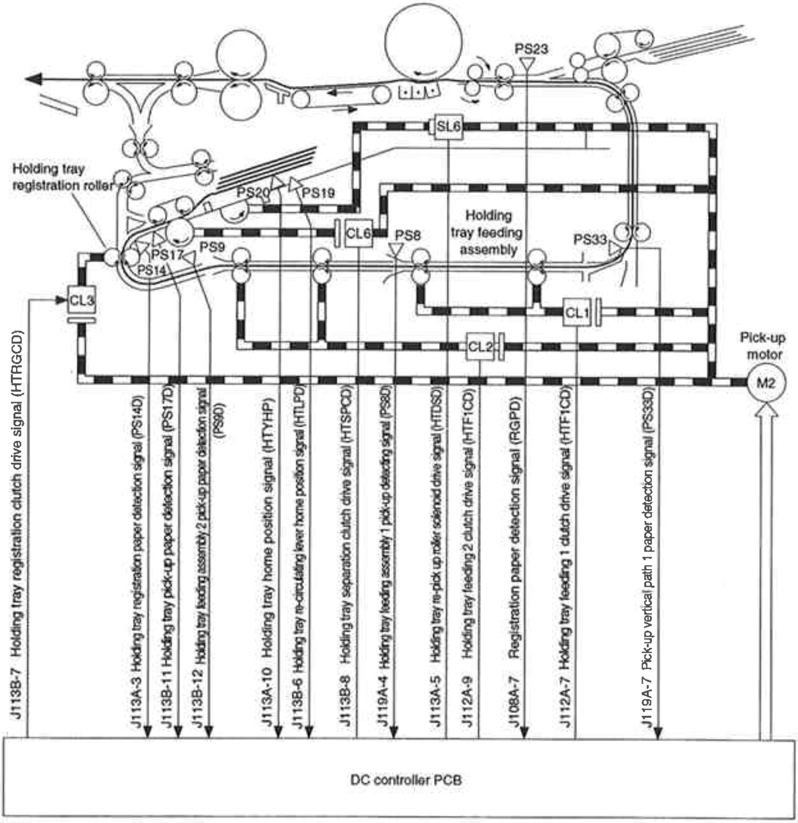

PS23
SL6
Holding tray registration roller
PS20
PS19
CL6
PS8
Holding tray feeding assembly
PS33
PS17
PS9
PS14
CL3
CL1
CL2
Pick-up motor
M2
J113B-7 Holding tray registration clutch drive signal (HTRGCD)
J113A-3 Holding tray registration paper detection signal (PS14D)
J113B-11 Holding tray pick-up paper detection signal (PS17D)
J113B-12 Holding tray feeding assembly 2 pick-up paper detection signal (PS9D)
J113A-10 Holding tray home position signal (HTYHP)
J113B-6 Holding tray re-circulating lever home position signal (HTLPD)
J113B-8 Holding tray separation clutch drive signal (HTSPCD)
J119A-4 Holding tray feeding assembly 1 pick-up detecting signal (PS8D)
J113A-5 Holding tray re-pick up roller solenoid drive signal (HTDSD)
J112A-9 Holding tray feeding 2 clutch drive signal (HTF1CD)
J108A-7 Registration paper detection signal (RGPD)
J112A-7 Holding tray feeding 1 clutch drive signal (HTF1CD)
J119A-7 Pick-up vertical path 1 paper detection signal (PS33D)
DC controller PCB

Figure 5-603

1. Sequence of Operations for Making Two-Sided Copies (2nd side)

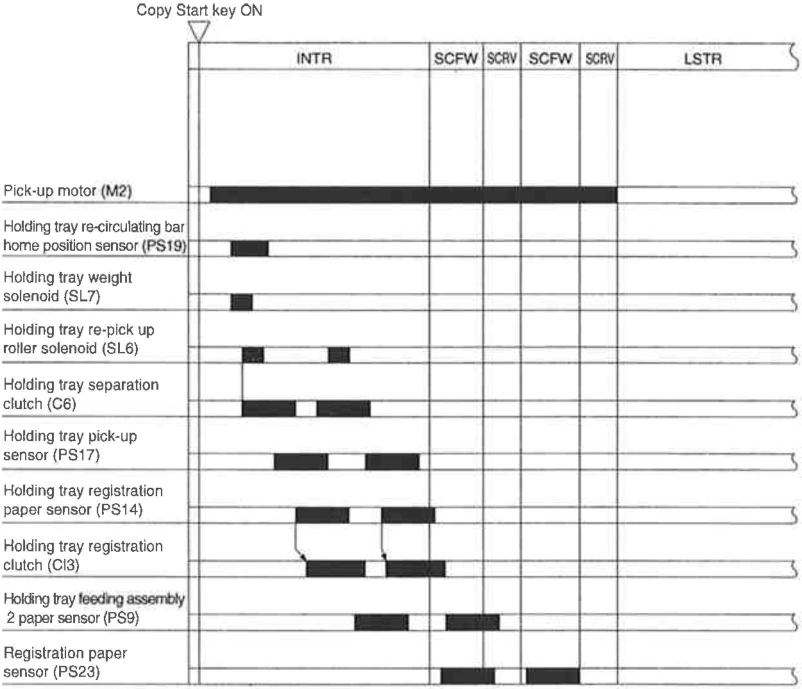

Copy Start key ON
INTR
SCFW
SCRV
SCFW
SCRV
LSTR
Pick-up motor (M2)
Holding tray re-circulating bar home position sensor (PS19)
Holding tray weight solenoid (SL7)
Holding tray re-pick up roller solenoid (SL6)
Holding tray separation clutch (C6)
Holding tray pick-up sensor (PS17)
Holding tray registration paper sensor (PS14)
Holding tray registration clutch (CI3)
Holding tray feeding assembly 2 paper sensor (PS9)
Registration paper sensor (PS23)

Figure 5-604

C. Making Overlay Copies (2nd side)

1. Outline

The feeding path for copying on the second side of an overlay copy is formed when the holding tray paper deflecting plate is lifted by the holding tray paper deflecting solenoid (SL8).

The second side is copied on copy paper picked up from the holding tray. The copy paper is first fed in the direction of the holding tray inlet and then switched back in the direction of the holding tray registration roller.

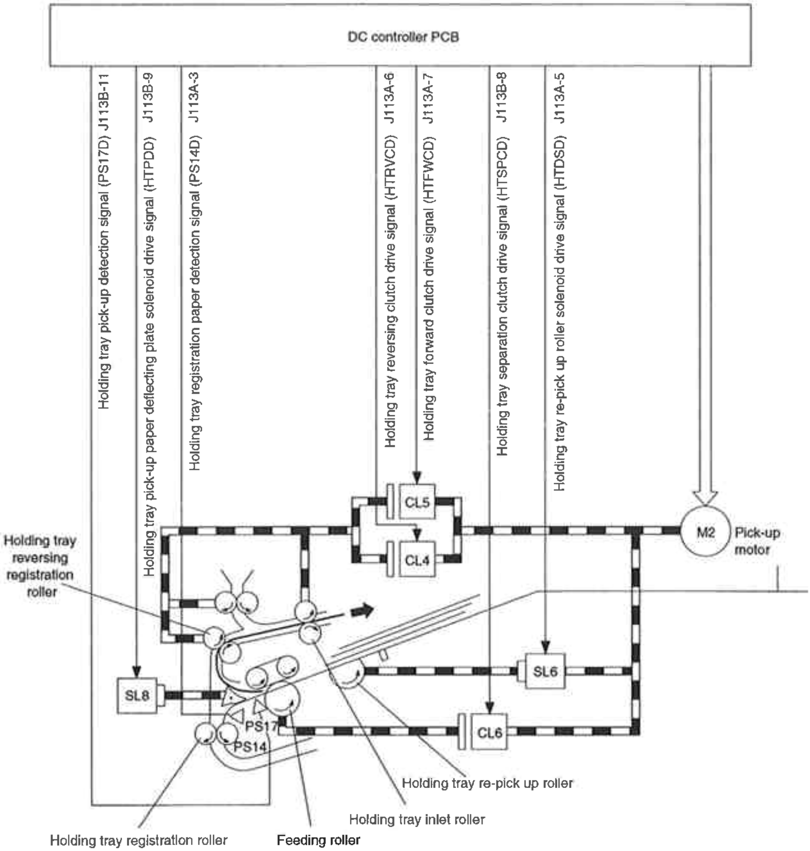

DC controller PCB
Holding tray pick-up detection signal (PS17D) J113B-11
Holding tray pick-up paper deflecting plate solenoid drive signal (HTPDD) J113B-9
Holding tray registration paper detection signal (PS14D) J113A-3
Holding tray reversing clutch drive signal (HTRVCD) J113A-6
Holding tray forward clutch drive signal (HTFWCD) J113A-7
Holding tray separation clutch drive signal (HTSPCD) J113B-8
Holding tray re-pick up roller solenoid drive signal (HTDSD) J113A-5
CL5
CL4
M2
Pick-up motor
Holding tray reversing registration roller
SL8
SL6
CL6
PS17
PS14
Holding tray re-pick up roller
Holding tray inlet roller
Holding tray registration roller
Feeding roller

Figure 5-605

2. Outline of Operations

① After pick-up, the copy paper is fed upward by the holding tray paper deflecting plate.

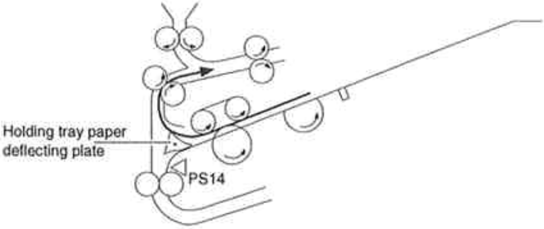

Holding tray paper deflecting plate
PS14

Figure 5-606

② As soon as the trailing edge of the copy paper leaves the holding tray paper deflecting plate, the holding tray forward clutch (CL5) turns OFF, temporarily stopping the copy paper.

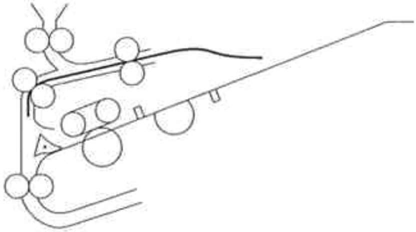


Figure 5-607

③ The holding tray reversing clutch (CL4) turns ON, and the copy paper is reversed in the direction of the holding tray registration roller.

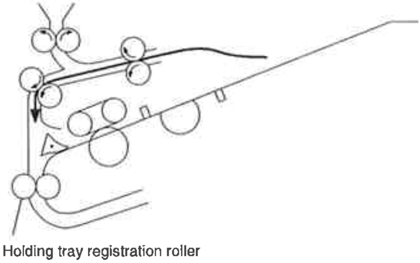

Holding tray registration roller

Figure 5-608

④ The copy paper reaches the holding tray registration roller and moves ahead to the registration roller through the holding tray feeding assembly.

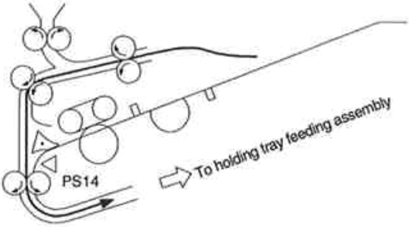

PS14
To holding tray feeding assembly

Figure 5-609

3. Sequence of Operations for Overlay Copies (2nd side)

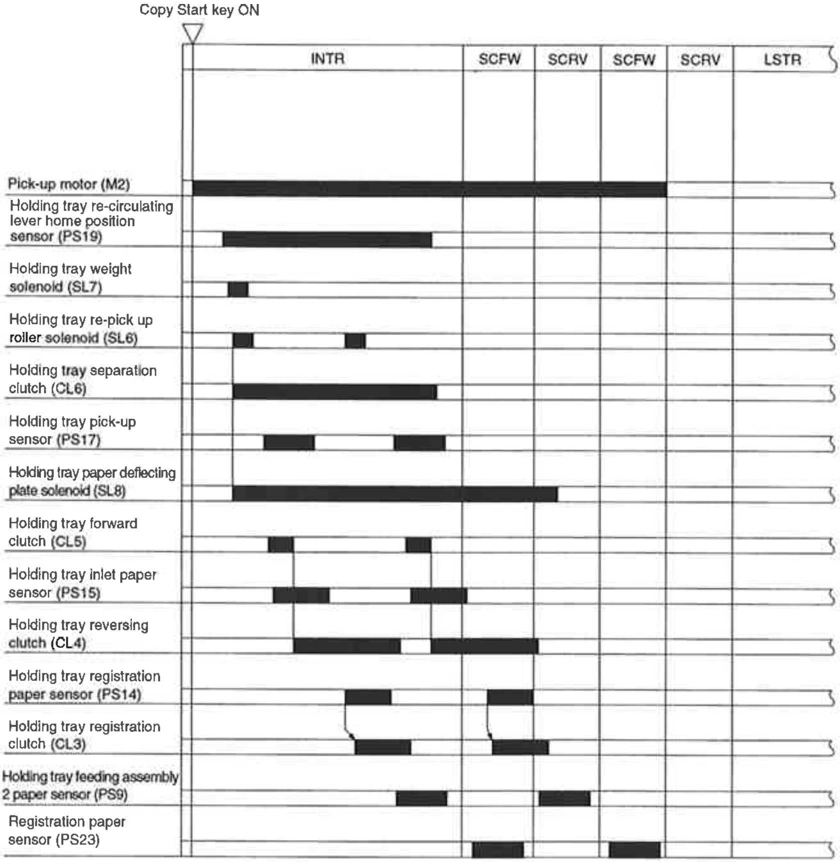

Copy Start key ON
INTR
SCFW
SCRV
SCFW
SCRV
LSTR
Pick-up motor (M2)
Holding tray re-circulating lever home position sensor (PS19)
Holding tray weight solenoid (SL7)
Holding tray re-pick up roller solenoid (SL6)
Holding tray separation clutch (CL6)
Holding tray pick-up sensor (PS17)
Holding tray paper deflecting plate solenoid (SL8)
Holding tray forward clutch (CL5)
Holding tray inlet paper sensor (PS15)
Holding tray reversing clutch (CL4)
Holding tray registration paper sensor (PS14)
Holding tray registration clutch (CL3)
Holding tray feeding assembly 2 paper sensor (PS9)
Registration paper sensor (PS23)

Figure 5-610

D. Reversal Delivery

The reversal delivery feeding path is formed by the delivery paper deflecting plate lifted by the delivery deflecting plate solenoid (SL2).

The delivery deflecting plate operates as soon as the registration clutch (CL9) turns ON, thereby forwarding the paper in the direction of the holding tray.

A specific period of time after the trailing edge of copy paper has moved past the fixing assembly outlet sensor (PS47), the holding tray forward clutch (CL5) turns OFF and, at the same time, the holding tray reversing clutch (CL4) turns ON.

This condition causes the roller inside the holding tray to rotate in reverse, feeding the copy paper in the direction of delivery. (Figure 5-612)

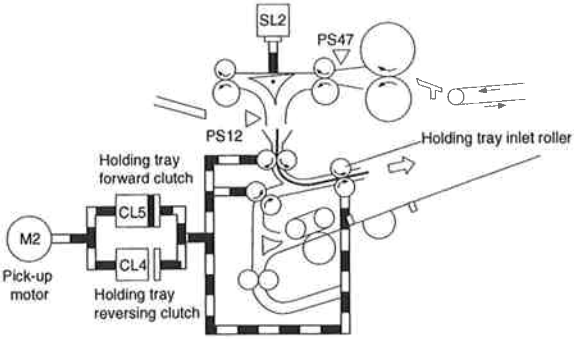

SL2
PS47
PS12
Holding tray inlet roller
Holding tray forward clutch
CL5
M2
CL4
Pick-up motor
Holding tray reversing clutch

Figure 5-611 (CW operation)

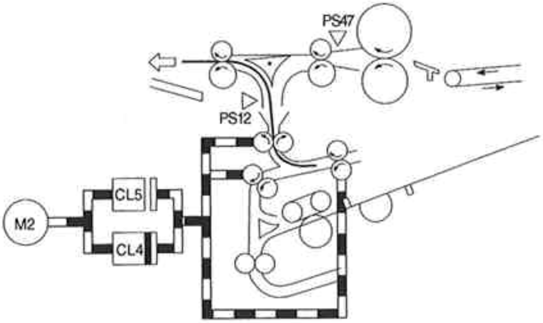

PS47
PS12
CL5
M2
CL4

Figure 5-612 (CCW operation)

1. Sequence of Reversal Delivery Operations

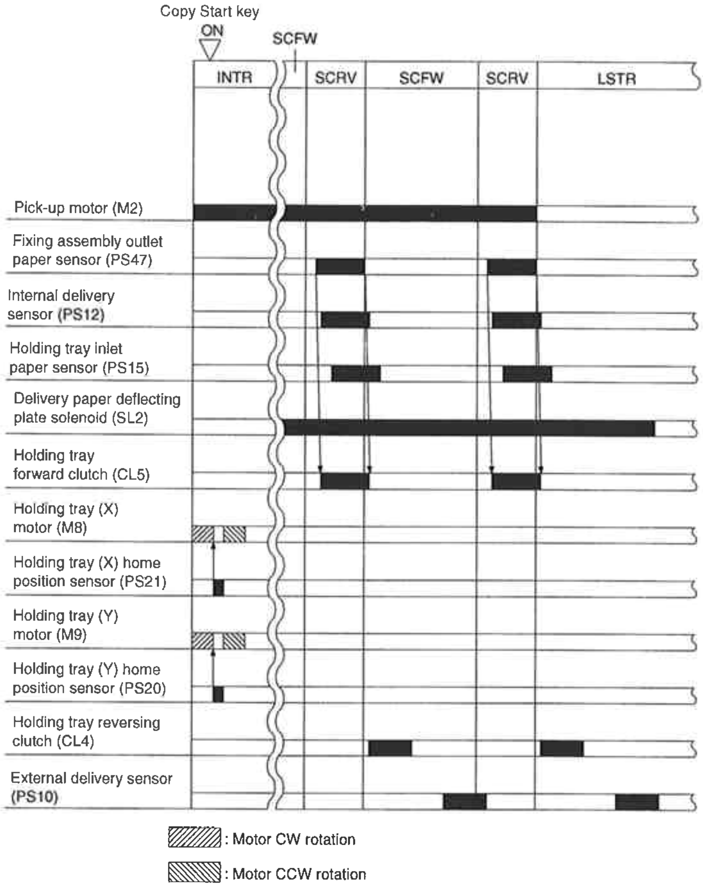

Copy Start key
ON
SCFW
INTR
SCRV
SCFW
SCRV
LSTR
Pick-up motor (M2)
Fixing assembly outlet paper sensor (PS47)
Internal delivery sensor (PS12)
Holding tray inlet paper sensor (PS15)
Delivery paper deflecting plate solenoid (SL2)
Holding tray forward clutch (CL5)
Holding tray (X) motor (M8)
Holding tray (X) home position sensor (PS21)
Holding tray (Y) motor (M9)
Holding tray (Y) home position sensor (PS20)
Holding tray reversing clutch (CL4)
External delivery sensor (PS10)
▨: Motor CW rotation
▨: Motor CCW rotation

Figure 5-613

E. Switching Paper Sizes for Two-Sided/Overlay/Reversal Delivery Copies

1. Movement of the Paper Size Guide

When the Copy Start key is pressed in two-sided/overlay/reversal delivery copy mode, the holding tray (X, Y) motor (M8, M9) starts to rotate clockwise, and the paper size guide moves in the direction of the arrow (Figure 5-614).

When the light-blocking plate of the paper size guide blocks the holding tray (X, Y) home position sensor (PS21, PS20), the motor (M8, M9) stops.

Then, the DC controller PCB sends a specific number of pulses to represent the size of the copy paper being used to the motor (M8, M9).

The motor, in response, rotates counterclockwise to move the paper size guide to the position appropriate to the copy size to wait for the arrival of copy paper.

While the second side is being copied, the motor (M8, M9) remains at rest; it remains at rest until the first side of the next copy is copied.

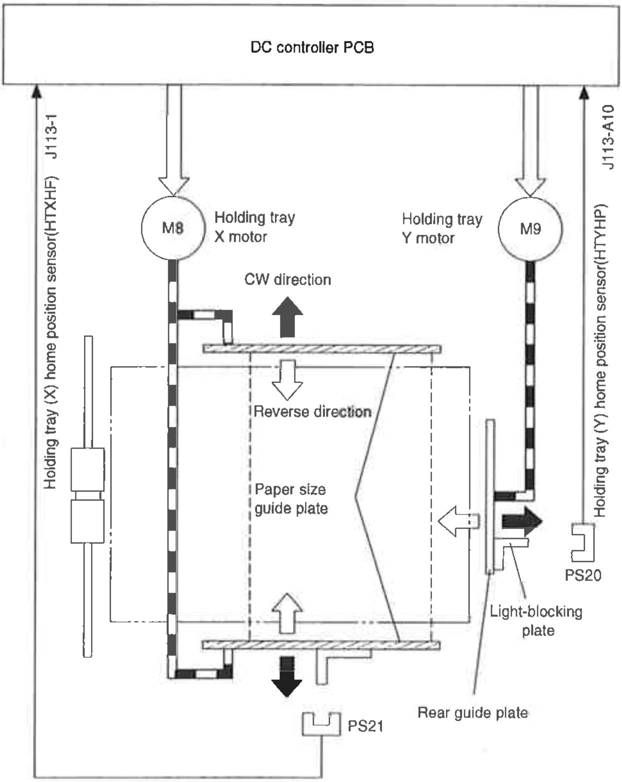

DC controller PCB
J113-1
J113-A10
Holding tray (X) home position sensor(HTXHF)
Holding tray (Y) home position sensor(HTYHP)
M8
Holding tray X motor
Holding tray Y motor
M9
CW direction
Reverse direction
Paper size guide plate
PS20
Light-blocking plate
Rear guide plate
PS21

Figure 5-614

2. Movement of the Paper Jogging Plate and the Rear Guide Plate

When copy paper reaches the holding tray assembly, the paper jogging plate (X direction) and the rear guide plate (Y direction) operate to arrange sheets of paper.

The holding tray paper jogging solenoid (SL9) on the holding tray paper guide plate is turned ON/OFF to operate the paper jogging plate to put the sheets of copy paper into order, thereby preventing skew movement for re-pick up.

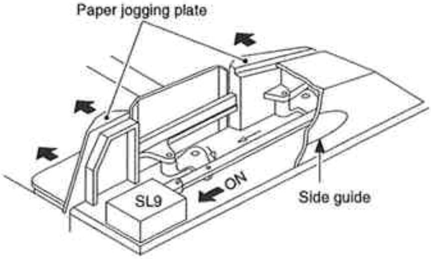


Figure 5-615

When copy paper reaches the holding tray assembly, the motor M9 rotates clockwise and counterclockwise to operate the rear guide plate to arrange the trailing edge of the copy paper.

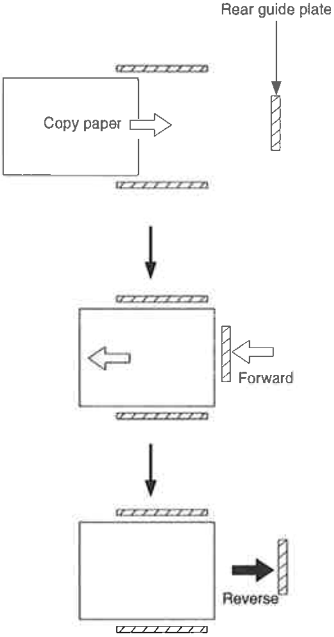


Figure 5-616

3. Detecting Copy Paper

Copy paper (last sheet) is detected for re-pick up from the holding tray.

When copy paper has been stacked on the holding tray, the holding tray re-circulating motor (M7) is driven to place the re-circulating lever on the top sheet of the stack. When the last sheet is picked up, the re-circulating lever falls through the holding tray, allowing the holding tray re-circulating lever home position sensor (PS19) to assume that the last sheet has been picked up and to generate the last sheet detection signal (HPLPD).

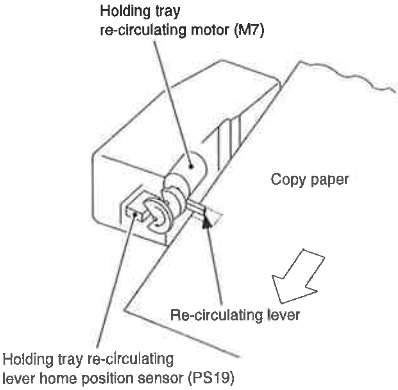

Holding tray
re-circulating motor (M7)
Copy paper
Re-circulating lever
Holding tray re-circulating
lever home position sensor (PS19)

Figure 5-617

F. Re-Pick Up from the Holding Tray

When the Copy Start key is pressed for copying on the second side, pick-up/separation operation is initiated.

In response to a press on the Copy Start key, the holding tray re-pick up solenoid (SL6) turns ON to rotate the holding tray re-pick up roller, sending the copy paper in the direction of the feeding roller/separation belt; at the same time, the holding tray weight solenoid (SL7) is turned ON to lower the weight plate on the copy paper to facilitate paper feeding.

If double feeding has occurred while paper is being moved in the direction of the feeding roller/separation belt, the separation belt pushes back the top sheet in the direction of the holding tray.

Reference:

The weight plate is lowered for re-pick up of the first sheet and the last sheet.

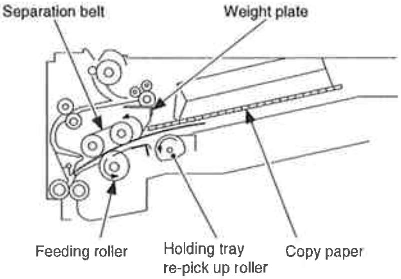


Figure 5-618

G. Skipping

1. Outline

What is termed *skipping* is a copy sequence used when making two-sided copies of one-sided originals by skipping every other original, thereby making efficient use of the space in the feeding assembly (holding tray assembly and holding tray feeding assembly) not taken up by copy paper.

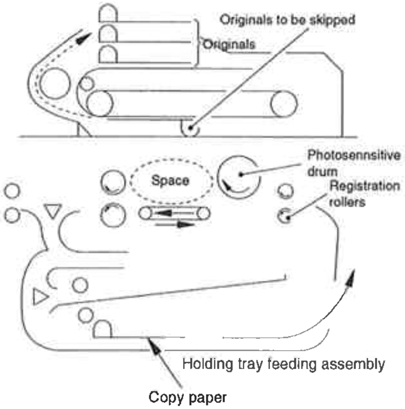

Originals to be skipped
Originals
Photosennsitive drum
Space
Registration rollers
Holding tray feeding assembly
Copy paper

Figure 5-619

Skipping is executed automatically under the following conditions:

- The RDF is used to make two-sided copies of one-sided originals.
- The copy paper and the original are A4, B5, or LTR and are fed horizontally.
- Binding mode and cover mode are not used.
- No more than two sets of copies are specified.

2. Operation

The originals are copied in the following sequence:

a. 4 Originals for 2 Sets of Copies
4 (th original), 2, 4, 3, 2, 1, 3, and 1 (st original)

b. 5 Originals for 2 Sets of Copies
5 (th original), 3, 1, 5, 4, 3, 2, 1, 4, and 2 (nd original)

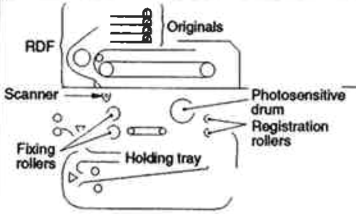
c. 4 Originals for 1 Set of Copies
4 (th original), 2, 3, and 1(st original)

d. 5 Originals for 1 Set of Copies
5 (th original), 3, 1, 4, and 2 (nd original)

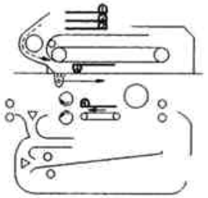
Reference:

Skipping may be disabled in user mode.

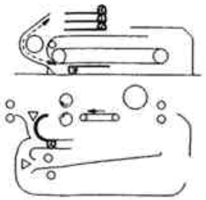
3. Skip Mode (copying an even number of originals)



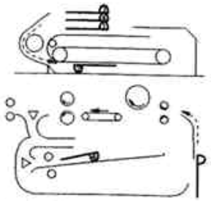
① The Copy Start key is pressed.



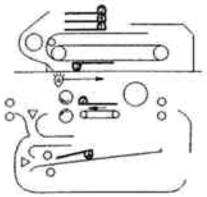
② The 4th original is picked up and copied.



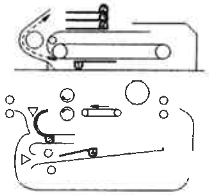
③ The 3rd original is picked up, but is returned to the RDF's original tray without copying (skip operation).



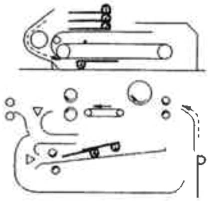
④ The 2nd original is picked up.



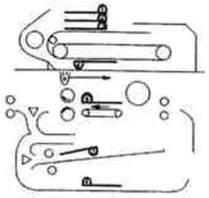
⑤ The 2nd original is copied.



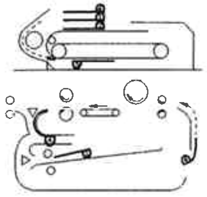
⑥ The 1st original is picked up, but is returned to the RDF's original tray without copying (skip operation). At this time, the number of originals is identified as being an even number. (If making one set of copies, moves to step 16.)



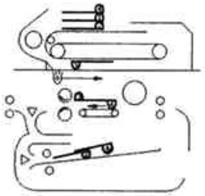
⑦ The 4th original is picked up.



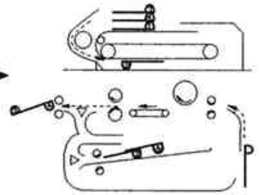
⑧ The 4th original is copied. (2nd set)



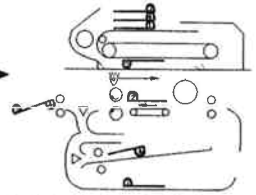
⑨ The 3rd original is picked up.



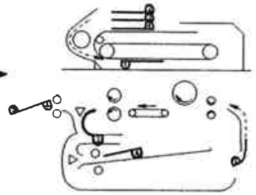
⑩ The 3rd original is copied on the back of the 4th copy paper picked up from the holding tray.



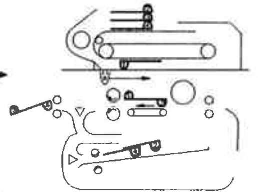
⑪ The 2nd original is picked up.



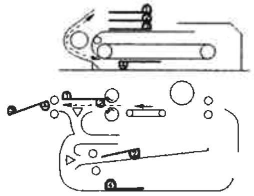
⑫ The 2nd original is copied. (2nd set)



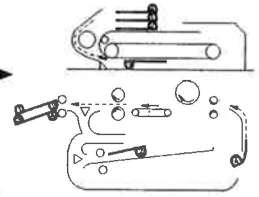
⑬ The 1st original is picked up.



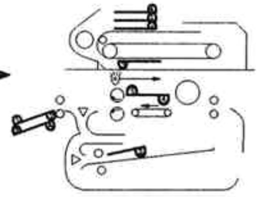
⑭ The 1st original is copied on the back of the 2nd copy paper picked up from the holding tray.



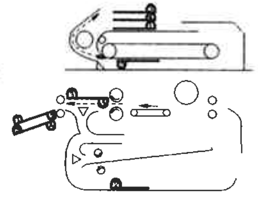
⑮ The 4th original is returned to the RDF's original tray without copying (skip operation). (If making two sets of copies, repeats steps 7 through 15 once.)



⑯ The 3rd original is picked up.

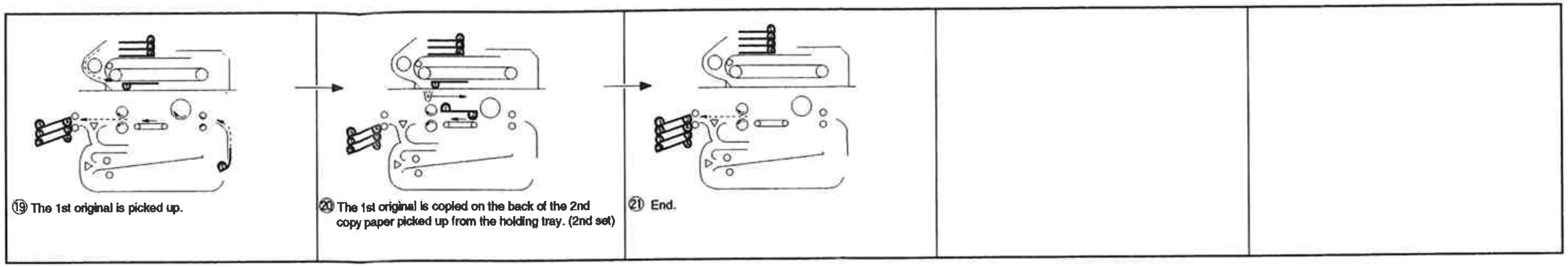


⑰ The 3rd original is copied on the back of the 4th copy paper picked up from the holding tray. (2nd set)



⑱ The 2nd original is returned to the RDF's original tray without copying (skip operation).

Figure 5-620a

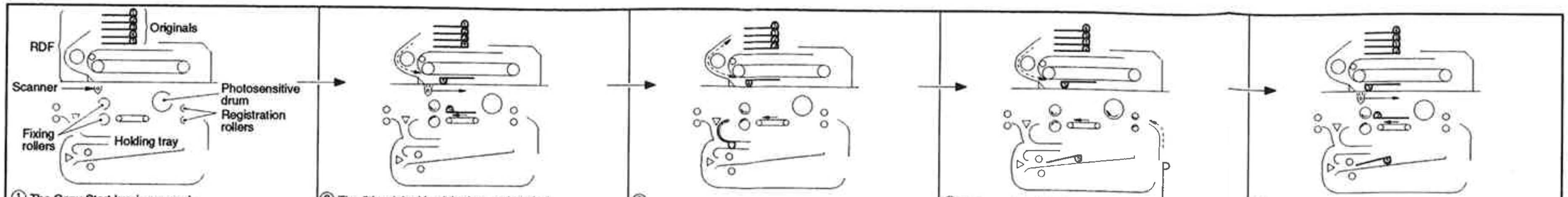

⑲ The 1st original is picked up.

⑳ The 1st original is copied on the back of the 2nd copy paper picked up from the holding tray. (2nd set)

㉑ End.

Figure 5-620b

4. Skip Mode (copying an odd number of originals)



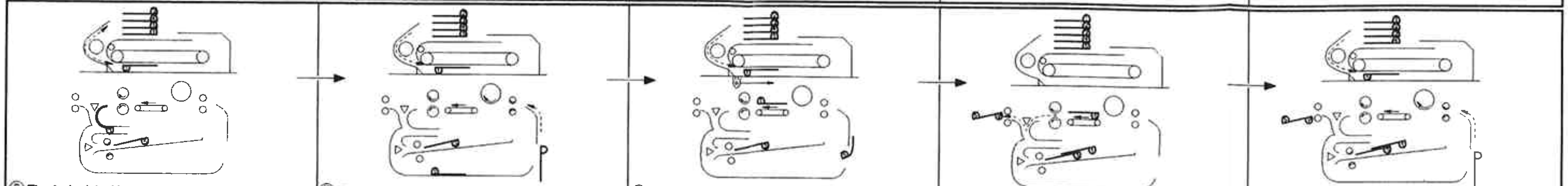
① The Copy Start key is pressed.

② The 5th original is picked up and copied.

③ The 4th original is returned to the RDF's original tray without copying (skip operation).

④ The 3rd original is picked up.

⑤ The 3rd original is copied.



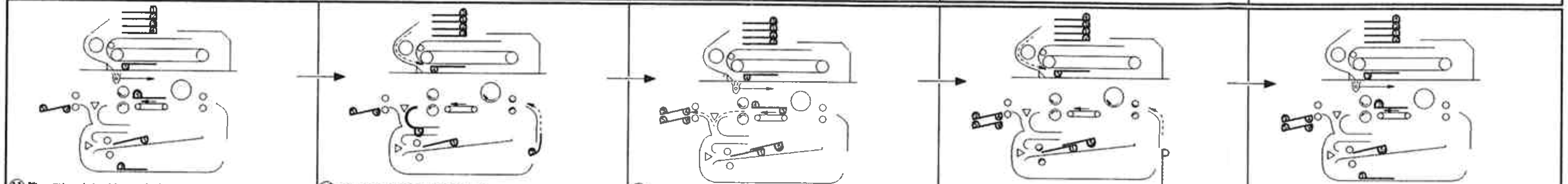
⑥ The 2nd original is returned to the RDF's original tray without copying (skip operation).

⑦ The 1st original is picked up.

⑧ The 1st original is copied.

⑨ The 5th copy paper picked up from the holding tray is moved through the delivery assembly, reversed, and discharged.
(If making one set of copies, moves to step 22.)

⑩ The 5th original is picked up.



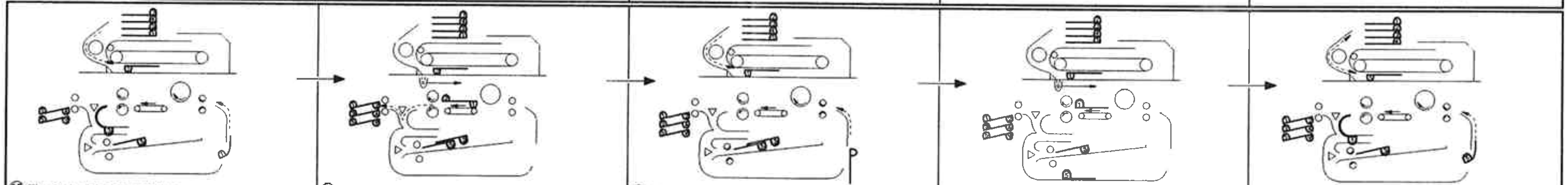
⑪ The 5th original is copied. (2nd set)
(When making two sets of copies, repeats steps 9 through 19 once.)

⑫ The 4th original is picked up.

⑬ The 4th original is copied to the back of the 3rd copy paper picked up from the holding tray. The copy paper is moved through the delivery assembly, reversed, and discharged.

⑭ The 3rd original is picked up.

⑮ The 3rd original is copied.



⑯ The 2nd original is picked up.

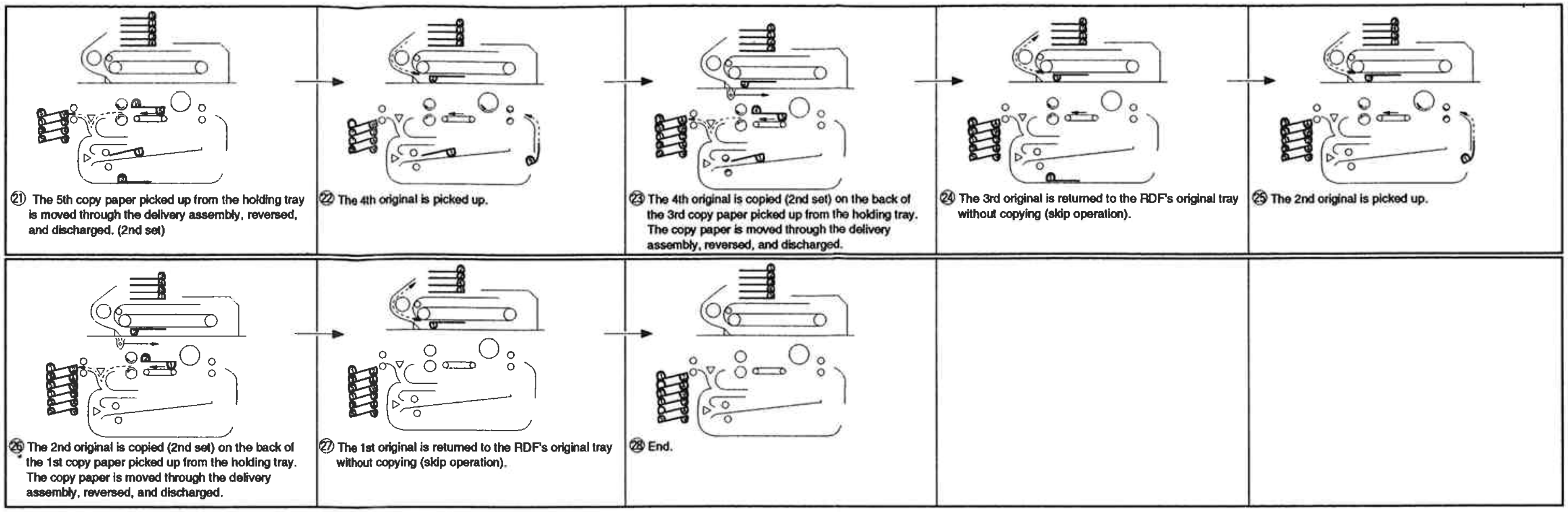
⑰ The 2nd original is copied on the back of the 1st copy paper picked up from the holding tray. The copy paper is moved through the delivery assembly, reversed, and discharged.

⑱ The 1st original is picked up.

⑲ The 1st original is copied.

⑳ The 5th original is returned to the RDF's original tray without copying (skip operation).

Figure 5-621a



㉑ The 5th copy paper picked up from the holding tray is moved through the delivery assembly, reversed, and discharged. (2nd set)

㉒ The 4th original is picked up.

㉓ The 4th original is copied (2nd set) on the back of the 3rd copy paper picked up from the holding tray. The copy paper is moved through the delivery assembly, reversed, and discharged.

㉔ The 3rd original is returned to the RDF's original tray without copying (skip operation).

㉕ The 2nd original is picked up.

㉖ The 2nd original is copied (2nd set) on the back of the 1st copy paper picked up from the holding tray. The copy paper is moved through the delivery assembly, reversed, and discharged.

㉗ The 1st original is returned to the RDF's original tray without copying (skip operation).

㉘ End.

Figure 5-621b

5. Reverse Delivery

Reverse delivery is executed when an odd number of originals are copied in skipping mode or when reverse delivery is selected. In reverse delivery, the copies are turned over for delivery so that they are collated on the copy tray.

a. If the copies of an odd number of originals are stacked not using reverse delivery,

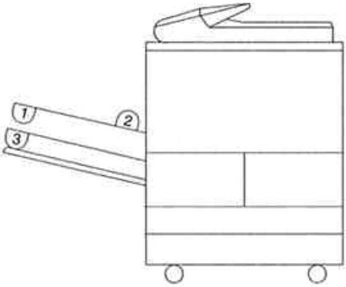


Figure 5-622a

b. If the copies of an odd number of originals are stacked using reverse delivery,

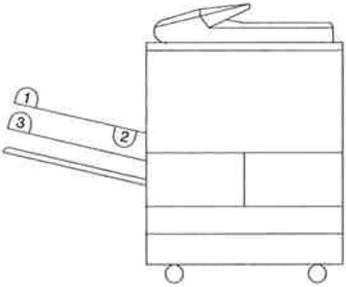


Figure 5-622b

VII. DETECTING JAMS

A. Outline

As many as 17 sensors are arranged as shown in Figure 5-701 to check if copy paper is moving properly. The microprocessor reads signals from sensors at such times as programmed to detect jams. When the microprocessor detects a jam, it discharges all sheets moving ahead of the jam and stops the ongoing operation; thereafter, it indicates instructions on jam removal on the control panel.

If the jam is in the pick-up assembly (Figure 5-701), control of the fixing assembly temperature is continued throughout jam removal work unless paper has been picked up from the multifeeder.

The sheets existing on the holding tray at time of a jam are picked up after jam removal. (This, however, does not apply if the holding tray has been removed for jam removal.)

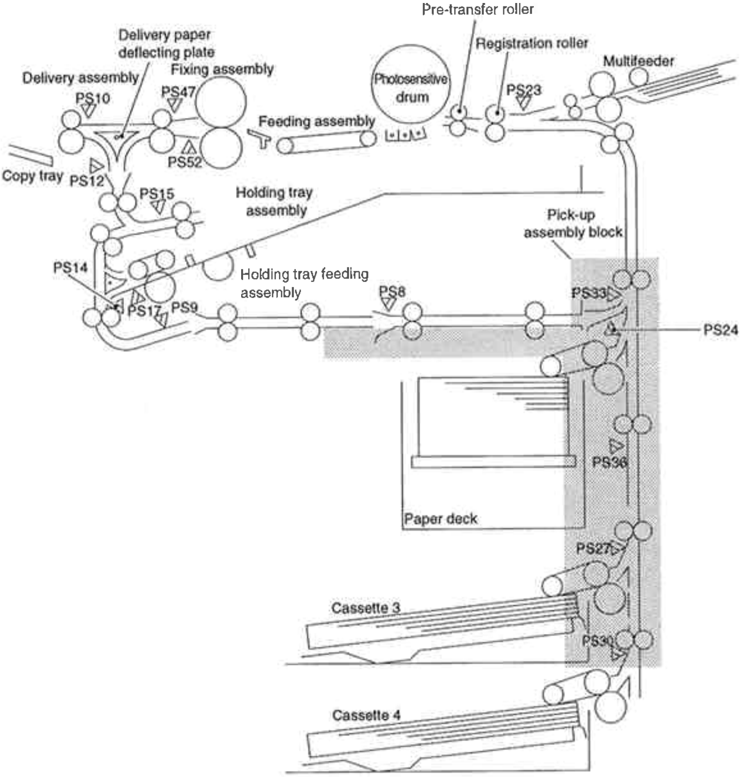

Pre-transfer roller
Delivery paper deflecting plate
Registration roller
Multifeeder
Fixing assembly
Delivery assembly
Photosensitive drum
PS10
PS47
PS23
Feeding assembly
PS52
Copy tray
PS12
PS15
Holding tray assembly
Pick-up assembly block
PS14
Holding tray feeding assembly
PS8
PS33
PS17
PS9
PS24
PS36
Paper deck
PS27
Cassette 3
PS30
Cassette 4

Figure 5-701

Sensor No.	Name	Function	Sensor No.	Name	Function
PS8	Holding tray feeding assembly 1 paper sensor	Detects delay/stationary jams.	PS23	Registration paper sensor	Detects delay/stationary jams.
PS9	Holding tray feeding assembly 2 paper sensor	Detects delay/stationary jams.	PS24	Pick-up vertical path 0 paper sensor	Detects delay/stationary jams.
PS10	External delivery sensor	Detects delay/stationary jams.	PS27	Pick-up vertical path 3 paper sensor	Detects delay/stationary jams.
PS12	Internal delivery sensor	Detects stationary jams.	PS30	Pick-up vertical path 4 paper sensor	Detects delay/stationary jams.
PS14	Holding tray registration paper sensor	Detects delay/stationary jams.	PS33	Pick-up vertical path 1 paper sensor	Detects delay/stationary jams.
PS15	Holding tray inlet paper sensor	Detects delay/stationary jams.	PS36	Pick-up vertical path 2 paper sensor	Detects delay/stationary jams.
PS17	Holding tray pick-up sensor	Detects delay jams.	PS47	Fixing assembly outlet paper sensor	Detects delay/stationary jams.
PS19	Holding tray recirculating lever home position sensor	Detects paper on holding tray.	PS52	Claw jam sensor	Detects stationary jams

Table 5-701

The microprocessor identifies any of the following conditions as a jam:

a. Paper exists over a sensor at power-on, at the end of wait-up, or during standby.

b. Delay jams are detected when copy paper does not reach a specific sensor within a specific period of time.

1. Registration roller delay jam by the registration paper sensor (PS23).
2. Pick-up vertical path feeding delay jam by the pick-up vertical path 1 paper sensor (PS33).
3. Pick-up vertical path feeding delay jam by the pick-up vertical path 0 paper sensor (PS24).
4. Pick-up vertical path feeding delay jam by the pick-up vertical path 2 paper sensor (PS36).
5. Pick-up vertical path feeding delay jam by the pick-up vertical path 3 paper sensor (PS27).
6. Pick-up vertical path feeding delay jam by the pick-up vertical path 4 paper sensor (PS30).
7. Fixing feeding re-pick up delay jam by the fixing assembly outlet paper sensor (PS47)
8. External delivery delay jam by the external delivery sensor (PS10).
9. Holding tray inlet delay jam by the holding tray inlet paper sensor (PS15).
10. Holding tray pick-up delay jam by the holding tray pick-up sensor (PS17).
11. Holding tray registration delay jam by the holding tray registration paper sensor (PS14).
12. Holding tray feeding assembly 2 delay jam by the holding tray feeding assembly 2 paper sensor (PS9).
13. Holding tray feeding assembly 1 delay jam by the holding tray feeding 1 paper sensor (PS8)

c. Stationary jams are detected when paper does not move past a specific sensor within a specific period of time.

1. Registration roller stationary jam by the registration paper sensor (PS23)
2. Pick-up vertical path feeding stationary jam by the pick-up vertical path 1 paper sensor (PS33)
3. Pick-up vertical path feeding stationary jam by the pick-up vertical path 0 paper sensor (PS24)
4. Pick-up vertical path feeding stationary jam by the pick-up vertical path 2 paper sensor (PS36)
5. Pick-up vertical path feeding stationary jam by the pick-up vertical path 3 paper sensor (PS27)
6. Pick-up vertical path feeding stationary jam by the pick-up vertical path 4 paper sensor (PS30)
7. Fixing feeding re-pick up stationary jam by the fixing assembly outlet paper sensor (PS47)
8. External delivery stationary jam by the external delivery sensor (PS10)
9. Internal delivery stationary jam by the internal delivery paper sensor (PS12)
10. Holding tray inlet stationary jam by the holding tray inlet paper sensor (PS15)
11. Holding tray registration stationary jam by the holding tray registration paper sensor (PS14)
12. Holding tray feeding assembly 2 stationary jam by the holding tray feeding assembly 2 paper sensor (PS9)
13. Holding tray feeding assembly 1 stationary jam by the holding tray feeding assembly 1 paper sensor (PS8)
14. Fixing assembly separation claw jam by the claw jam sensor (PS52)

1. Registration Roller Delay Jam

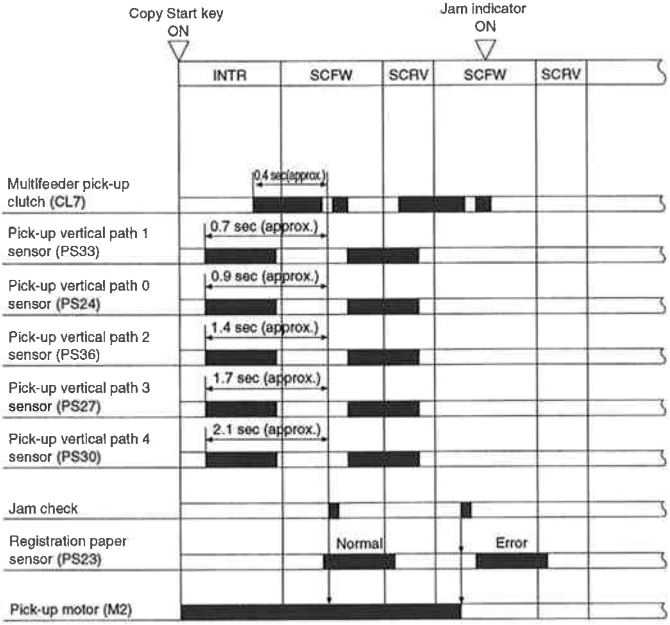
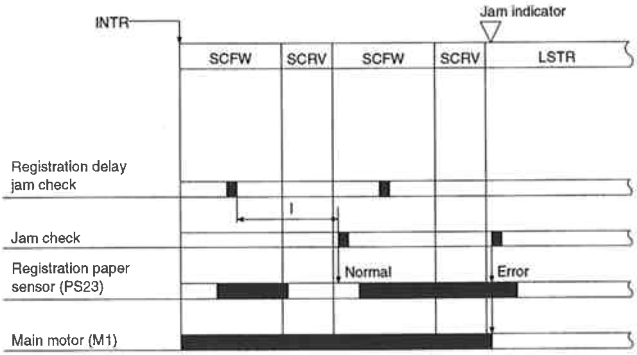

Copy Start key
ON
Jam indicator
ON
INTR
SCFW
SCRV
SCFW
SCRV
Multifeeder pick-up clutch (CL7)
0.4 sec (approx.)
Pick-up vertical path 1 sensor (PS33)
0.7 sec (approx.)
Pick-up vertical path 0 sensor (PS24)
0.9 sec (approx.)
Pick-up vertical path 2 sensor (PS36)
1.4 sec (approx.)
Pick-up vertical path 3 sensor (PS27)
1.7 sec (approx.)
Pick-up vertical path 4 sensor (PS30)
2.1 sec (approx.)
Jam check
Registration paper sensor (PS23)
Normal
Error
Pick-up motor (M2)

Figure 5-702

2. Registration Roller Stationary Jam


INTR
Jam indicator
SCFW
SCRV
SCFW
SCRV
LSTR
Registration delay jam check
l
Jam check
Registration paper sensor (PS23)
Normal
Error
Main motor (M1)

l:Varies according to the length of copy paper.

Figure 5-703

3. Pick-Up Vertical Path Feeding 0/1 Delay Jam

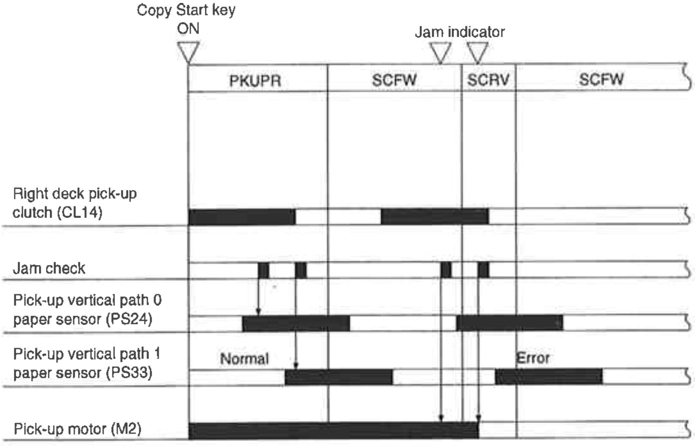
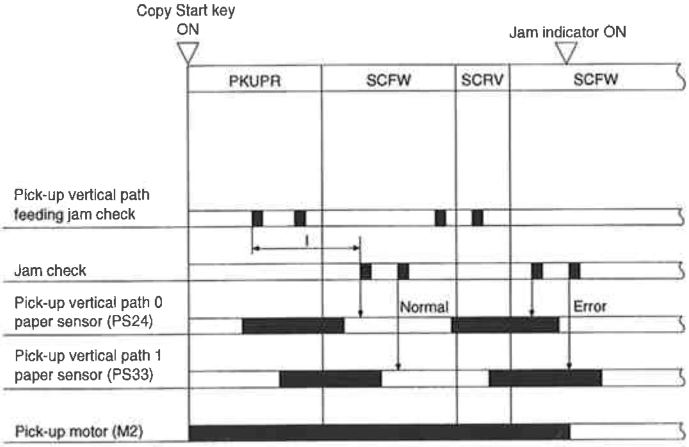

Copy Start key
ON
Jam indicator
PKUPR
SCFW
SCRV
SCFW
Right deck pick-up clutch (CL14)
Jam check
Pick-up vertical path 0 paper sensor (PS24)
Pick-up vertical path 1 paper sensor (PS33)
Normal
Error
Pick-up motor (M2)

Figure 5-704

4. Pick-Up Vertical Path Feeding 0/1 Stationary Jam


Copy Start key
ON
Jam indicator ON
PKUPR
SCFW
SCRV
SCFW
Pick-up vertical path feeding jam check
l
Jam check
Pick-up vertical path 0 paper sensor (PS24)
Normal
Error
Pick-up vertical path 1 paper sensor (PS33)
Pick-up motor (M2)

l:Varies according to the length of copy paper.

Figure 5-705

5. Pick-Up Vertical Path Feeding 2–4 Delay Jam

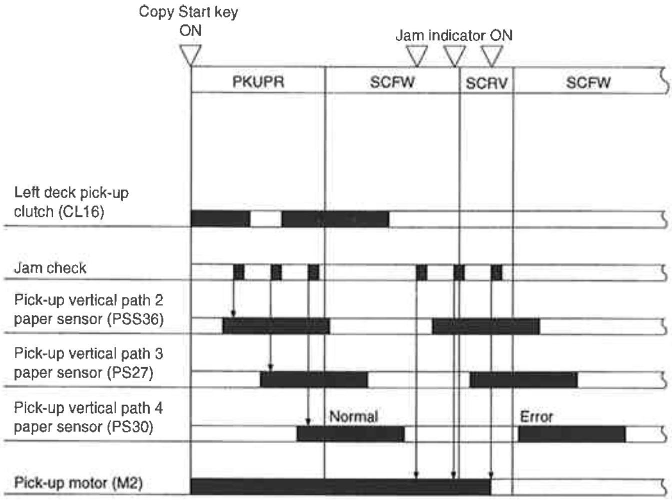
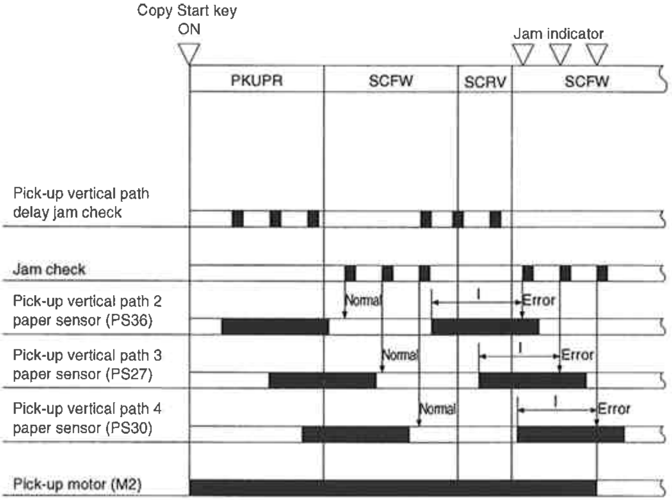

Copy Start key ON
Jam indicator ON
PKUPR
SCFW
SCRV
SCFW
Left deck pick-up clutch (CL16)
Jam check
Pick-up vertical path 2 paper sensor (PSS36)
Pick-up vertical path 3 paper sensor (PS27)
Pick-up vertical path 4 paper sensor (PS30)
Normal
Error
Pick-up motor (M2)

Figure 5-706

6. Pick-Up Vertical Path Feeding 2–4 Stationary Jam


Copy Start key ON
Jam indicator
PKUPR
SCFW
SCRV
SCFW
Pick-up vertical path delay jam check
Jam check
Pick-up vertical path 2 paper sensor (PS36)
Pick-up vertical path 3 paper sensor (PS27)
Pick-up vertical path 4 paper sensor (PS30)
Normal
l
Error
Normal
l
Error
Normal
l
Error
Pick-up motor (M2)

l:Varies according to the length of copy paper.

Figure 5-707

7. Fixing Assembly Outlet Delay Jam

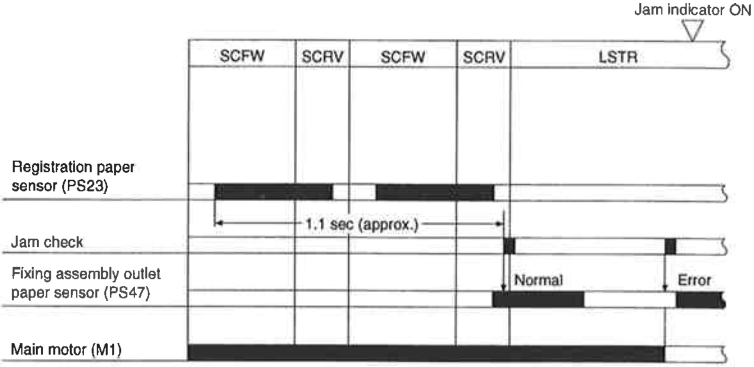
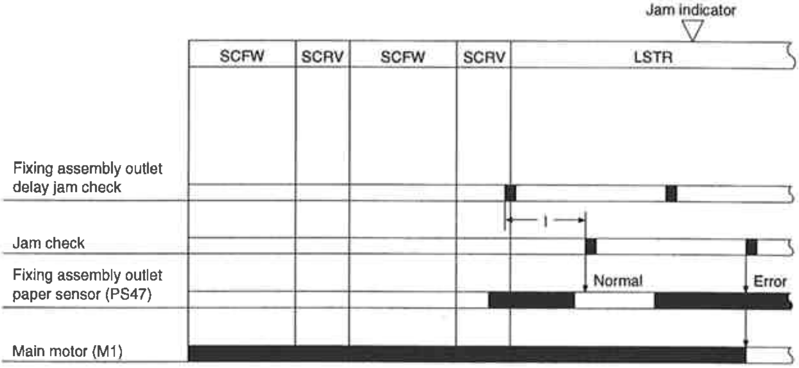

Jam indicator ON
SCFW
SCRV
SCFW
SCRV
LSTR
Registration paper sensor (PS23)
1.1 sec (approx.)
Jam check
Fixing assembly outlet paper sensor (PS47)
Normal
Error
Main motor (M1)

Figure 5-708

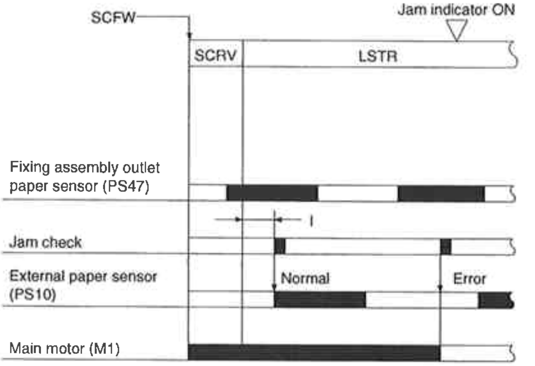
8. Fixing Assembly Outlet Stationary Jam


Jam indicator
SCFW
SCRV
SCFW
SCRV
LSTR
Fixing assembly outlet delay jam check
l
Jam check
Fixing assembly outlet paper sensor (PS47)
Normal
Error
Main motor (M1)

l:Varies according to the length of copy paper.

Figure 5-709

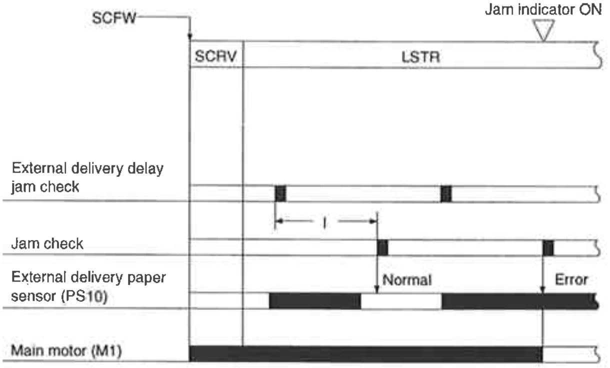
9. External Delivery Delay Jam


SCFW
Jam indicator ON
SCRV
LSTR
Fixing assembly outlet paper sensor (PS47)
l
Jam check
External paper sensor (PS10)
Normal
Error
Main motor (M1)

l: About 0.25 sec in normal delivery.
Varies according to the length of copy paper in reverse delivery.

Figure 5-710

10. External Delivery Stationary Jam


SCFW
Jam indicator ON
SCRV
LSTR
External delivery delay jam check
l
Jam check
External delivery paper sensor (PS10)
Normal
Error
Main motor (M1)

l: Varies according to the length of copy paper.

Figure 5-711

11. Internal Delivery Delay Jam

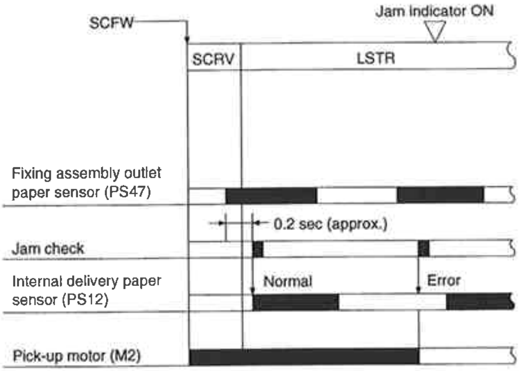
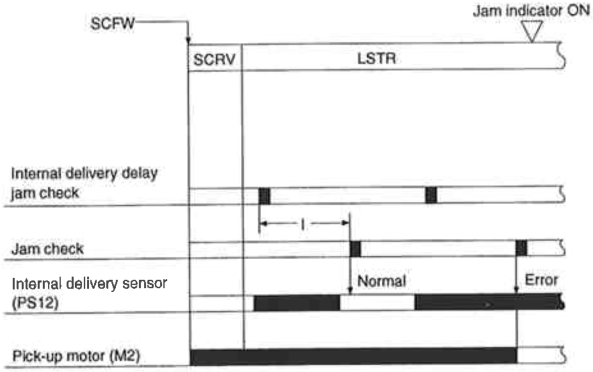

SCFW
Jam indicator ON
SCRV
LSTR
Fixing assembly outlet paper sensor (PS47)
0.2 sec (approx.)
Jam check
Internal delivery paper sensor (PS12)
Normal
Error
Pick-up motor (M2)

Figure 5-712

12. Internal Delivery Paper Stationary Jam


SCFW
Jam indicator ON
SCRV
LSTR
Internal delivery delay jam check
l
Jam check
Internal delivery sensor (PS12)
Normal
Error
Pick-up motor (M2)

l: Varies according to the length of copy paper.

Figure 5-713

13. Holding Tray Inlet Delay Jam

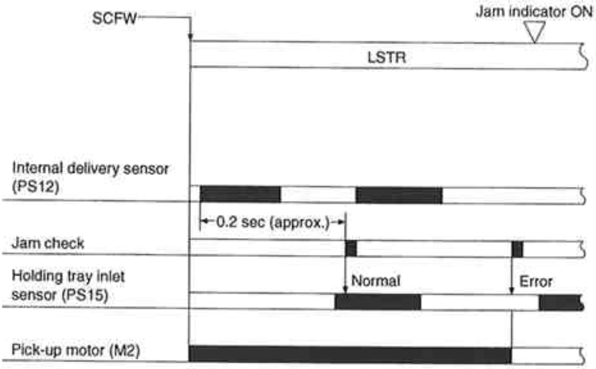
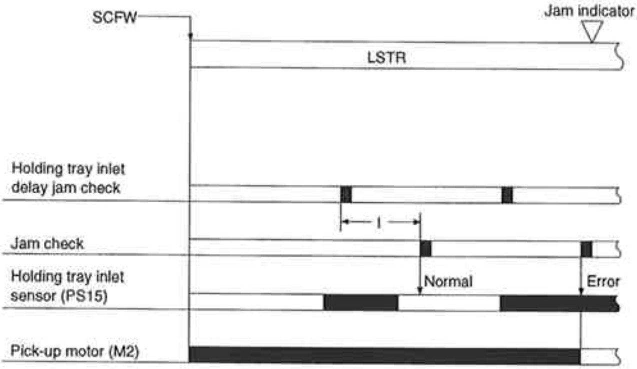

SCFW
Jam indicator ON
LSTR
Internal delivery sensor (PS12)
0.2 sec (approx.)
Jam check
Holding tray inlet sensor (PS15)
Normal
Error
Pick-up motor (M2)

Figure 5-714

14. Holding Tray Inlet Stationary Jam


SCFW
Jam indicator
LSTR
Holding tray inlet delay jam check
l
Jam check
Holding tray inlet sensor (PS15)
Normal
Error
Pick-up motor (M2)

l: Varies according to the length of copy paper.

Figure 5-715

15. Holding Tray Re-Pick Up Delay Jam

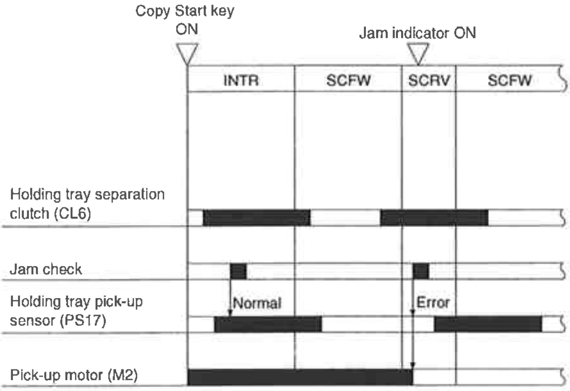
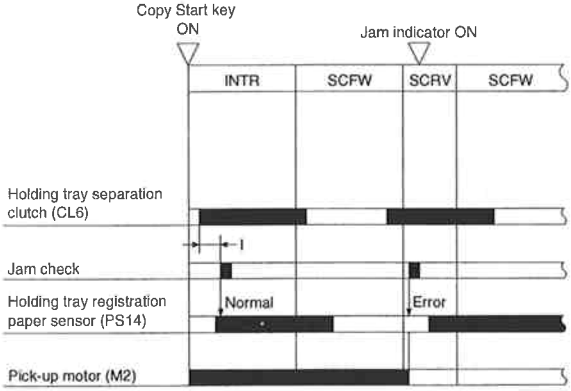


Figure 5-716

16. Holding Tray Registration Delay Jam



I: 0.1 sec in two-sided copying.
Varies according to the length of copy paper in overlay copying.

Figure 5-717

17. Holding Tray Registration Stationary Jam

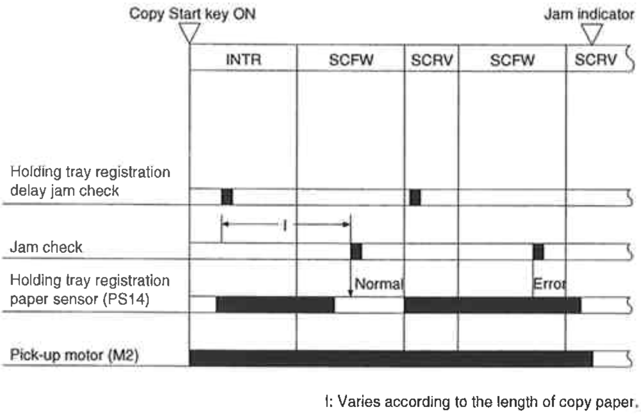


Figure 5-718

18. Holding Tray Feeding 1/2 Delay Jam

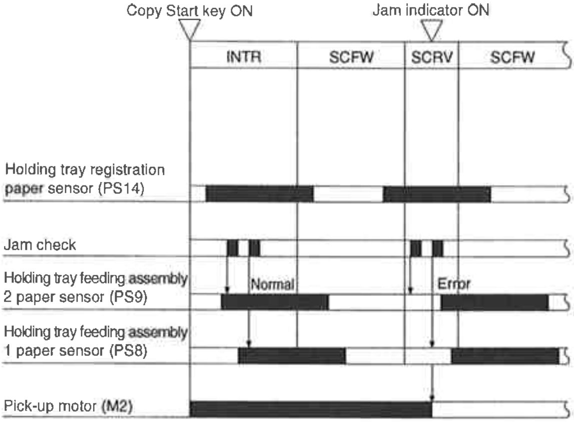


Figure 5-719

19. Holding Tray Feeding 1/2 Stationary Jam

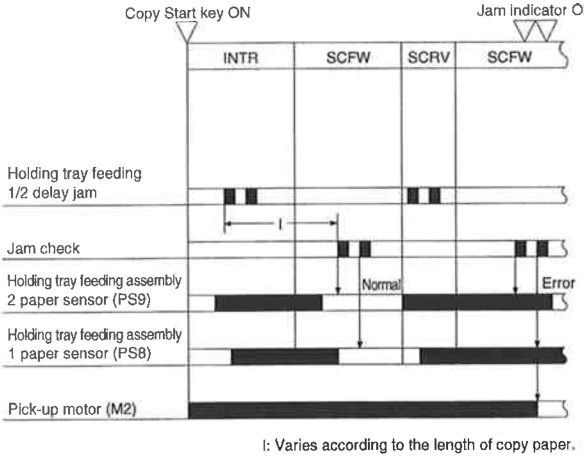

Copy Start key ON
Jam indicator ON
INTR
SCFW
SCRV
SCFW
Holding tray feeding 1/2 delay jam
l
Jam check
Holding tray feeding assembly 2 paper sensor (PS9)
Normal
Error
Holding tray feeding assembly 1 paper sensor (PS8)
Pick-up motor (M2)
l: Varies according to the length of copy paper.

Figure 5-720

20. Fixing Assembly Separation Claw Stationary Jam

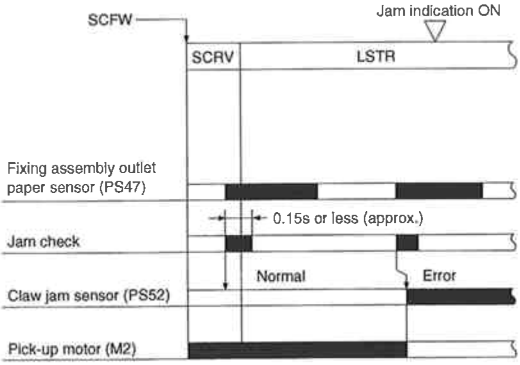

SCFW
Jam indication ON
SCRV
LSTR
Fixing assembly outlet paper sensor (PS47)
0.15s or less (approx.)
Jam check
Normal
Error
Claw jam sensor (PS52)
Pick-up motor (M2)

Figure 5-721

VIII. DISASSEMBLY AND ASSEMBLY

This section explains mechanical characteristics and describes how to disassemble/assemble the machine.

Be sure to observe the following whenever disassembling/assembling the machine:

1. ⚠ Disconnect the power plug before starting the work.
2. Unless otherwise shown, assemble the parts by reversing the steps given to disassemble them.
3. Identify each screw by type (length, diameter) and location.
4. A washer is used for one of the mounting screws on the rear cover to protect against static electricity; be sure to use the washer when assembling the part.
5. A washer is used for some mounting screws (for grounding wire, varistor) to ensure correct electrical continuity; be sure to use the washer when assembling the part.
6. As a rule, do not operate the machine while any of its parts are removed.
7. When sliding out the duplexing unit or the fixing assembly, be sure to turn off the front door switch or the power switch.

A. Multifeeder Assembly

1. Removing the Multifeeder Assembly

1) Remove the right cover and right upper cover; then disconnect the two connectors ①.

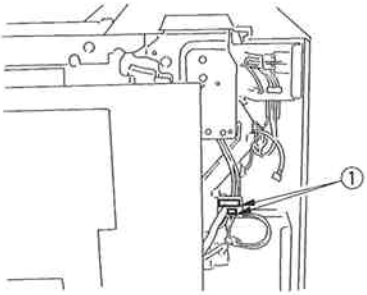


Figure 5-801

2) Open the multifeeder assembly, and open the multifeeder door by pulling on the grip. Remove the door tape, and lift the multifeeder assembly to separate the multifeeder assembly from the hinge.

2. Removing the Pick-Up Roller

1) Open the multifeeder paper guide.
2) Remove the stop rings ① from both left and right 1 (two each); then, remove the shutters ② and the two rollers ③ (two each).

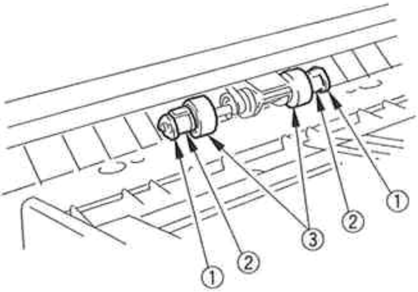


Figure 5-802

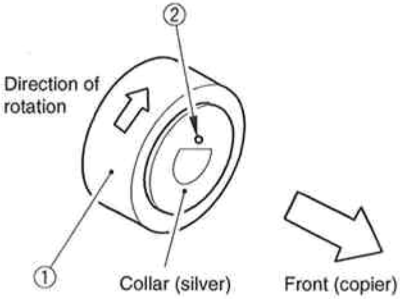
Caution:
If the multifeeder was used at time of installation or if it was used after a long time, pick-up operation may fail.
If such is the case, remove the protection sheet from the sponge roller, and dry wipe the surface of the sponge roller.

3. Installing the Pick-Up Roller

Install the pick-up roller by reversing the steps used to remove it with the following in mind.

- The front and rear pick-up rollers are not interchangeable.
- The front pick-up roller is silver.

When installing the pick-up roller ① to the pick-up assembly, be sure that the round marking ② on the collar (silver) is toward the front.

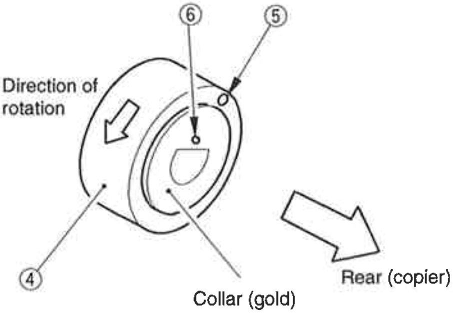


① Marking (roller)
② Marking (collar)

Figure 5-803

- The pick-up roller at the rear is gold.

  When installing the pick-up roller ④ to the pick-up assembly, be sure that the round marking ⑤ on the side of the roller and the round marking ⑥ on the collar (gold) are at the rear of the copier.



④ Pick-up roller
⑤ Marking (roller)
⑥ Marking (collar)

Figure 5-803a

4. Removing the Separation Roller

1) Remove the multifeeder assembly.
2) Remove the two mounting screws ①, and remove the upper registration roller assembly.

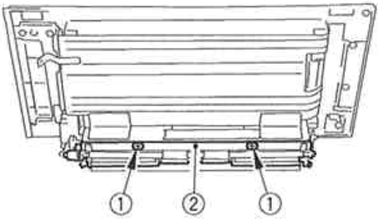


Figure 5-804

3) Remove the spring ③ at the front and the rear (one each) and the mounting screw ④ at the front; then, pull out the positioning pin ⑤, and remove the lower registration roller assembly ⑥.

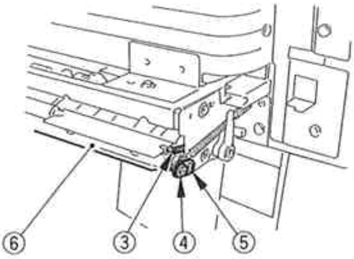


Figure 5-805

4) Remove the two mounting screws ⑦, and remove the separation roller support ⑧.
5) Remove the joint, and remove the separation roller ⑨.

Caution:
The bushing at the front will come off when removing the separation roller. Take care.

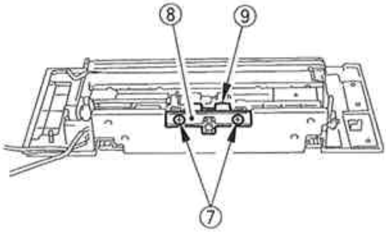


Figure 5-806

Caution:
The urethane sponge used is pink immediately after foaming and changes to yellow as time passes, faster if exposed to light; it changes from pink to orange and to yellow, showing the general characteristics of urethane sponge; however, such discoloration will not lower its physical properties (performance). Keep in mind that the same type of sponge can take on different colors.

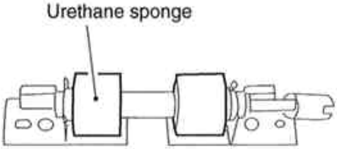


Figure 5-806a

5. Removing the Feeding Roller

1) Remove the multifeeder assembly.
2) Remove the separation roller.
3) Remove the pick-up roller at the front, and remove the stop ring.
4) Remove the stop ring ① at the front of the feeding roller assembly, and remove the feeding roller assembly ③ together with the timing belt ②.

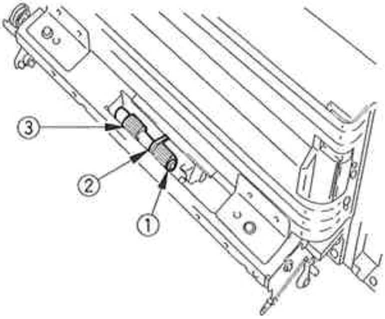


Figure 5-807

6. Removing the Multifeeder Paper Sensor

1) Remove the mounting screw ①, and remove the solenoid cover ②. Remove the mounting screw ③. Remove the solenoid ④ together with the support plate.

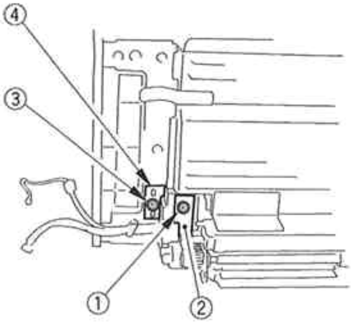


Figure 5-808

2) Remove the two mounting screws ⑤, and remove the grip ⑥.

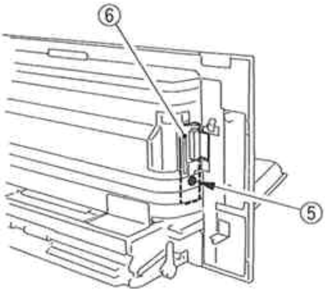


Figure 5-809

3) Remove the ten mounting screws ⑦, and remove the door sensor fixing ⑧ and the multifeeder cover ⑨.

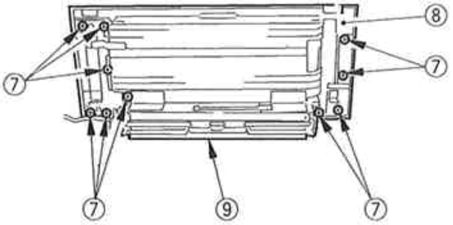


Figure 5-810

4) Remove the two mounting screws ⑩, and remove the lower cover ⑪.

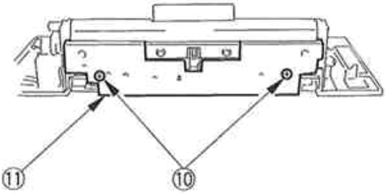


Figure 5-811

5) Remove the two mounting screws ⑫, and remove the guide plate ⑬.

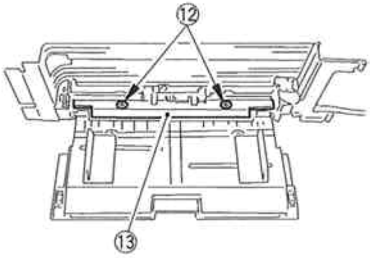


Figure 5-812

6) Remove the two mounting screws ⑭, and remove the sensor mount ⑮.
7) Remove the sensor from the sensor mount.

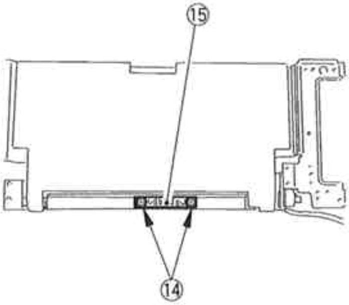


Figure 5-813

7. Attaching the Side Guide Timing Belt for the Multifeeder Assembly

Butt the rack plate of the multifeeder against section A (open state).
Move the slide volume in the direction of B, and attach the timing belt to the pulley.

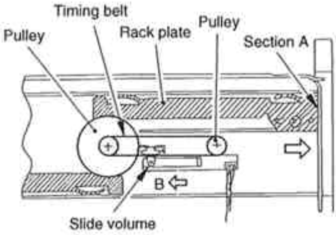
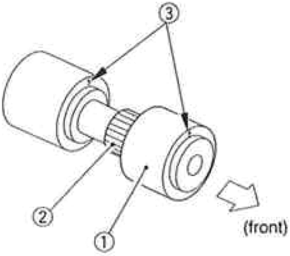


Figure 5-814

8. Installing the Feeding Roller of the Multifeeder

Install the pick-up roller ① to the multifeeder pick-up assembly so that the belt pulley ② and the marking '1' ③ are at the front of the copier.



① Pick-up roller
② Belt pulley
③ Marking (roller)

Figure 5-815

9. Adjusting the Pick-Up/Feeding Roller Pressure (multifeeder)

If double feeding or pick-up failure occurs during pick-up, adjust the position of the pressure spring of the separation roller:

- If double feeding occurs, move the position of the spring hook on side A.
- If pick-up failure occurs, move the spring hook on side B.

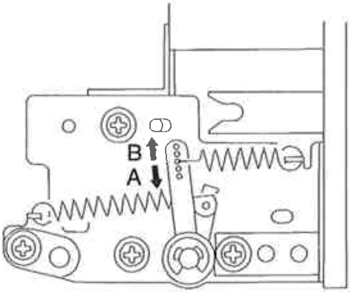


Figure 5-816

10. Positioning the Pick-Up Roller Releasing Solenoid (multifeeder)

Make adjustments by sliding the solenoid in the direction of A so that the gap between the shutter ① and the shutter plate ② is 0.4 ±0.2 mm when the solenoid is pulled.

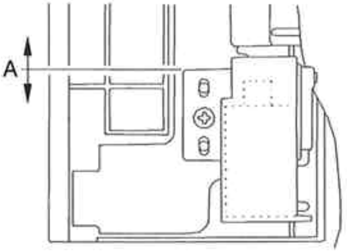


Figure 5-817

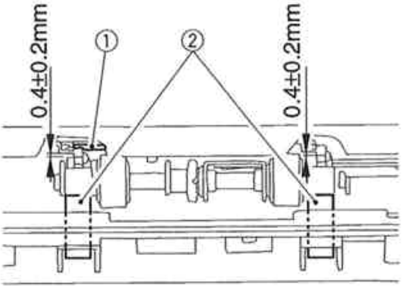


Figure 5-818

B. Paper Deck Assembly

1. Removing the Paper Deck Assembly from the Copier

1) Remove the two stoppers ① from the left and the right of the paper deck, and remove the paper deck.

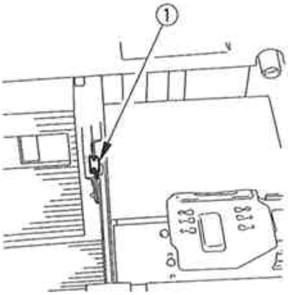


Figure 5-820 (left side of paper deck)

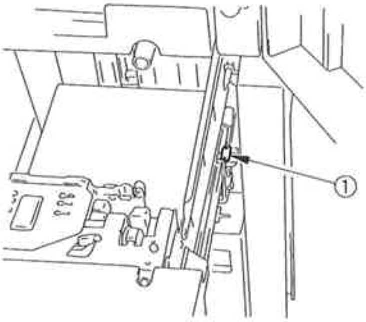


Figure 5-820a (right side of paper deck)

2. Removing the Lifter Cable

1) Remove the paper deck.
2) Remove the two mounting screws ① from the top, loosen the two mounting screws ② on the side, and remove the deck front cover ③.
3) Remove the two mounting screws ④ from the inside of the deck; then, remove the guide plate ⑤ at the front and the rear.

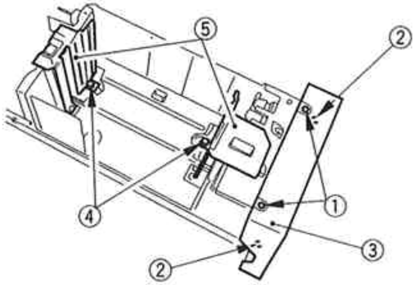


Figure 5-821

4) Mark the position of the latch assembly with a scribe; then, remove the seven mounting screws ⑥ from the left and the right (7 in total), and remove the latch assembly ⑦.
5) Remove the gear cover ⑧ from the front right.

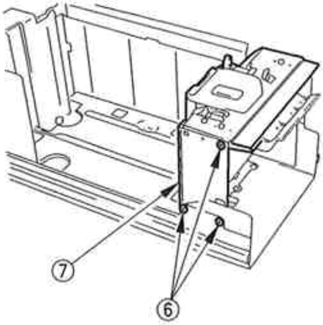


Figure 5-822 (left)

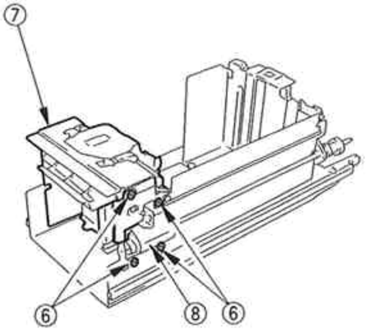


Figure 5-822a (right)

6) Remove the mounting screw ⑨ from the front, thereby freeing the oil damper plate ⑩.

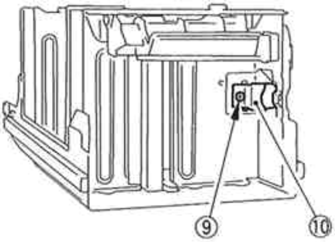


Figure 5-823

7) Remove the E-ring ⑪, and remove the end of the cable ⑫ from the pulley while sliding out the gear and the pulley cover to the front.

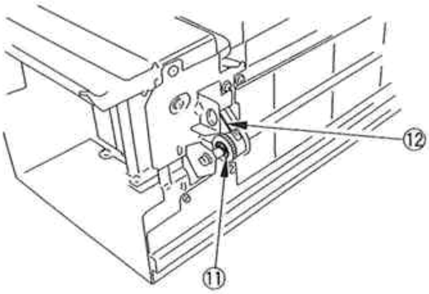


Figure 5-824

8) While holding the gear and the spring at the rear, remove the E-ring ⑬; then, remove the cable ⑮ from the pulley cover ⑭ while sliding out the pulley cover to the front.
9) Remove the end of the cable from the pulley.

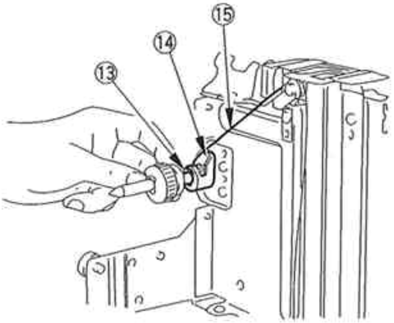


Figure 5-825

10) Remove the mounting screw ⑯ from the cable relay assembly at the front, and remove the fixing ⑰.

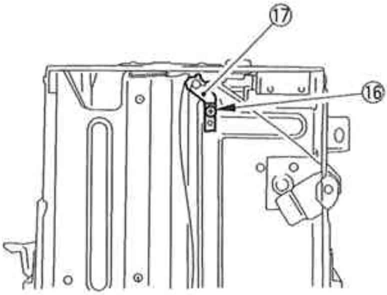


Figure 5-826

11) Remove the mounting screw ⑱ from the cable relay assembly at the rear, and remove the fixing ⑲.

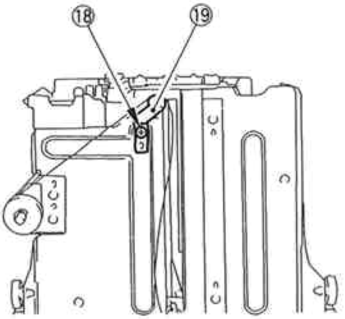


Figure 5-827

12) Remove the two mounting screws ⑳, and remove the grip assembly ㉑.

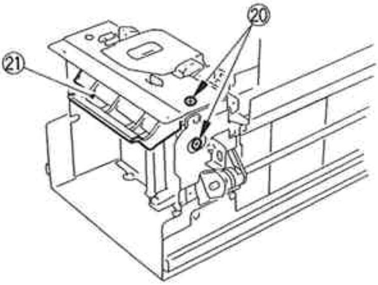


Figure 5-828

13) Remove the eleven mounting screws ㉒, and remove the cable together with its mounting plate ㉓.

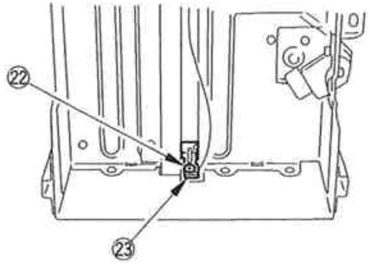


Figure 5-829 (front)

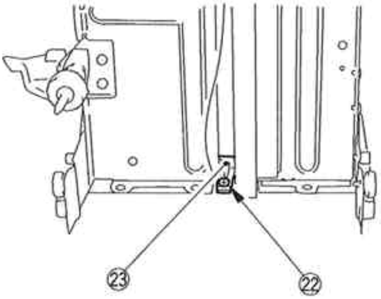


Figure 5-829a (rear)

3. Changing the Deck Paper Size

To change the size of the paper deck, change the position of the guide plate at the front, rear, and rear left.

Reference:

At time of shipment from the factory, the paper deck is set to A4.

You need not perform the following steps if the user uses A4 sheets. (Be sure, however, to attach the paper size label.)

1) Pull out the deck to the front until it stops.
2) Remove the three mounting screws ① from the guide plate at the front, rear, and rear left, and remove the three guide plates ②.

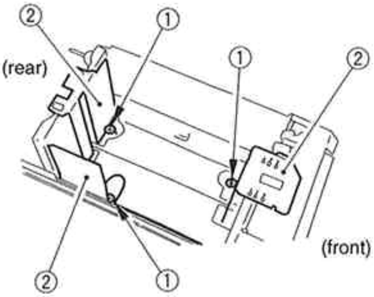


Figure 5-830

3) Install the front, rear, and rear left guide plate ② according to the size markings on the base plate, front side plate, and guide plate of the deck.

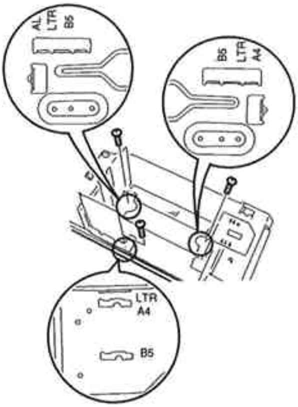


Figure 5-831

Caution:
Check to make sure that the front and the rear guide plates are installed as follows:
- The plate is installed at a right angle in relation to the base of the deck.
- The plate is installed in parallel in relation to the metal plate at the front and the rear.

4) Put copy paper in the deck, and push in the deck into the copier.
5) Register the new deck paper size in the copier's memory in service mode (✻5✻).

4. Adjusting the Registration for the Deck

Remove the deck front cover; then, loosen the mounting screws ① on both left and right of the deck (2 in total), and slide the latch assembly ② back and forth until the specifications indicated in Figure 5-833 are met.

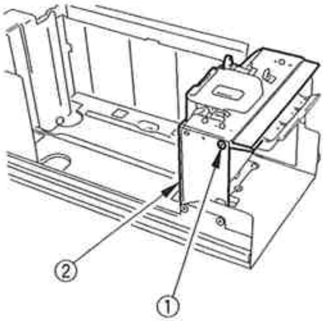


Figure 5-832 (left)

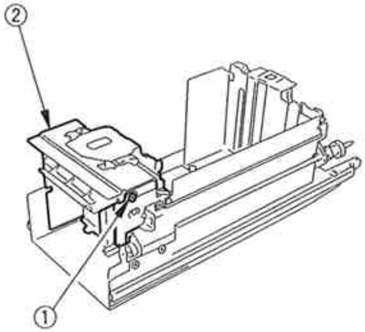


Figure 5-832a (right)

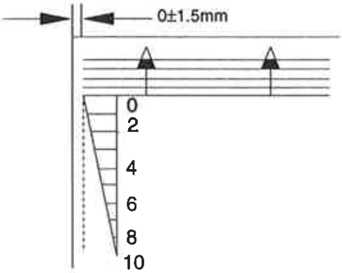


Figure 5-833

C. Cassette/Paper Deck Pick-Up Assembly

1. Removing the Pick-Up Assembly from the Copier

1) Slide out the paper deck and the cassette from the appropriate holder.
2) Open the upper right door and the lower right door.

Caution:
You may not be able to remove the pick-up assembly if you try to remove it without first removing the cassette and the paper deck because of the lifter.

3) Remove the mounting screw ① and the connector cover ②; then, disconnect the two connectors ③.
4) Remove the two mounting screws ④, and remove the pick-up assembly ⑤.

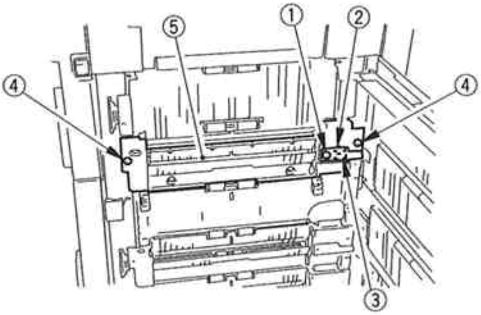


Figure 5-834

2. Removing the Pick-Up Roller

1) Remove the pick-up assembly from the copier.
2) Remove the two stop rings ① from the outside, and remove the pick-up rollers ② in the direction of the arrows.

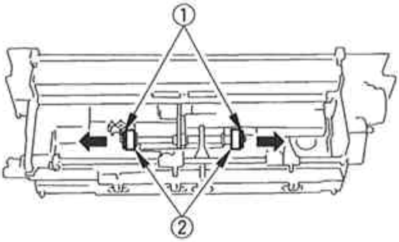


Figure 5-835

■ Orientation of the Pick-Up Roller

Install the pick-up roller by reversing the steps used to remove it with the following in mind:

- The front and rear pick-up rollers are not interchangeable.
- The collar of the front pick-up roller is gold.

When installing the pick-up roller ① to the pick-up assembly, be sure that the round marking ② on the side of the roller and the round marking ③ on the collar (gold) are toward the front of the machine.

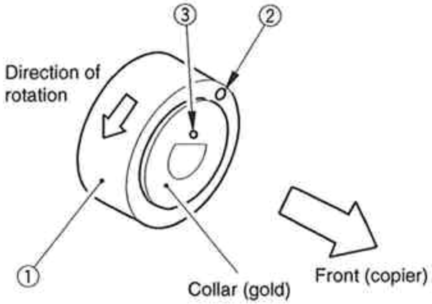

③
②
Direction of rotation
①
Collar (gold)
Front (copier)

Figure 5-836

- The collar of the pick-up roller at the rear is silver. When installing the pick-up roller ④ to the pick-up assembly, be sure that the round marking ⑤ of the collar (silver) is toward the rear.

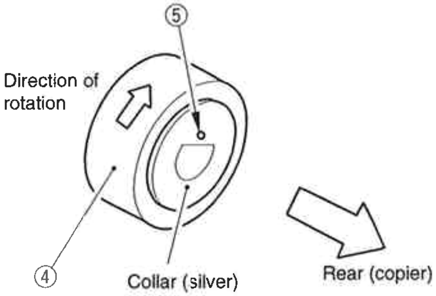

⑤
Direction of rotation
④
Collar (silver)
Rear (copier)

Figure 5-836a

3. Removing the Feeding Roller

1) Remove the pick-up assembly from the copier.
2) Remove the screw ②, and remove the feeding roller cover ①.
3) Remove the stop ring ③ from the front of the feeding roller.
4) Remove the stop ring ④ at the front and the pick-up roller ⑤; then, remove the feeding roller ⑦ together with the timing belt ⑥.

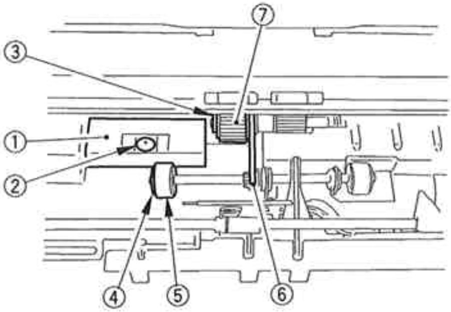


Figure 5-837

4. Removing the Separation Roller

1) Remove the two mounting screws ①, and remove the feeding guide plate ②; then, remove the open/close guide ③.

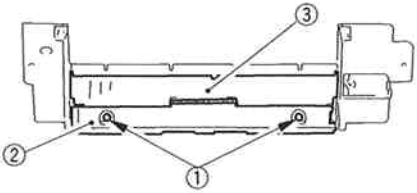


Figure 5-838

2) Remove the two mounting screws ④, and remove the separation roller assembly ⑤ from the joint.

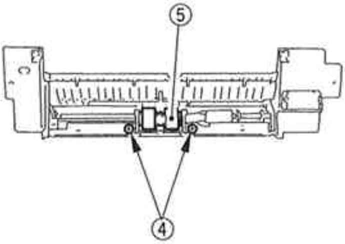


Figure 5-839

3) Remove the separation roller ⑥ from the separation roller shaft mount.

Caution:
Take care not to drop the pin from the roller.

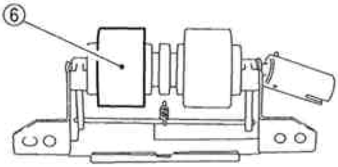


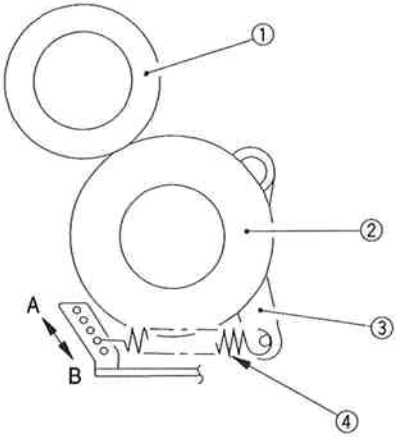
Figure 5-840

Caution:
The urethane sponge used is pink immediately after foaming and changes to yellow as time passes, faster if exposed to light; it changes from pink to orange and to yellow, showing the general characteristics of urethane sponge; however, such discoloration will not lower its physical properties (performance). Keep in mind that the same type of sponge can take on different colors.

5. Adjusting the Separation Roller Pressure

If double feeding or pick-up failure occurs during pick-up, adjust the position of the pressure spring of the separation roller:

- If double feeding occurs, move the position of the spring hook on side B.
- If pick-up failure occurs, move the spring hook on side A.



① Feeding roller
② Separation roller
③ Locking lever
④ Pressure spring

Figure 5-841

6. Orientation of the Separation Roller

Keep the following in mind when replacing the separation roller:

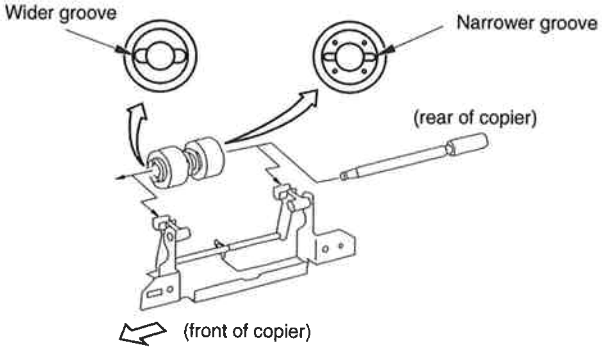


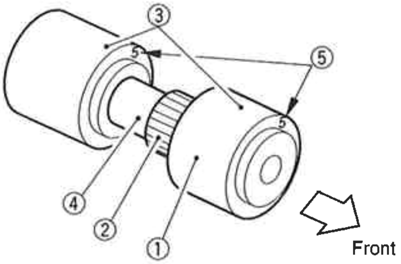
Figure 5-842

Caution:
If installed in the wrong orientation, the separation roller will interfere with the locking washer.

7. Orientation of the Feeding Roller of the Cassette/Deck Pick-Up Assembly

When installing the feeding roller to the cassette/deck pick-up assembly, install it so that the belt pulley ② is at the front of the copier.

When installing the feeding roller ③ to the feeding roller shaft ④, be sure so that the marking '5' ⑤ is toward the front.



① Feeding roller assembly
② Belt pulley
③ Feeding roller
④ Feeding roller shaft
⑤ Marking (roller)

Figure 5-843

8. Position of the Pick-Up Roller Releasing Solenoid of the Deck

Adjust the position of the solenoid so that the left end of the right solenoid arm is 57.2 ±0.5 mm from the center of the hole A in the solenoid mount as indicated in Figure 5-844.

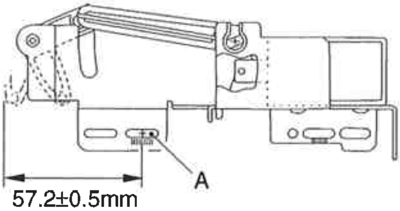


Figure 5-844

9. Position of the Pick-Up Roller Releasing Solenoid for the Cassette

Turn the two screws ① to adjust the solenoid so that the distance from the bottom of the pick-up assembly and section A of the roller arm is 36 ± 0.5 mm as indicated in Figure 5-845.

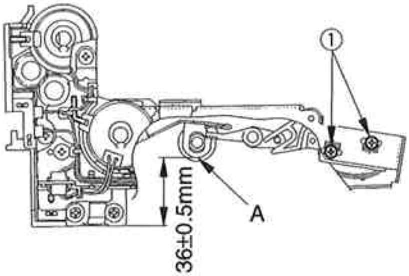


Figure 5-845

10. Adjusting Registration for the Cassette

Loosen the screw ② shown in Figure 5-846, and adjust the position of the cassette hook plate ① so that the registration is as specified. (See p. 10-53.)

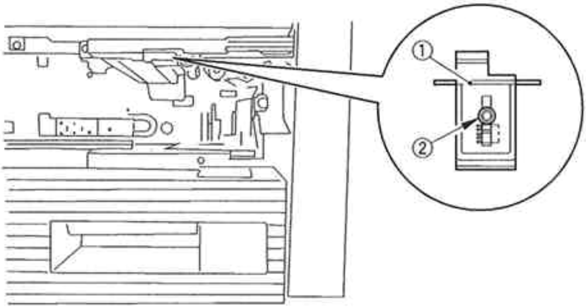


Figure 5-846

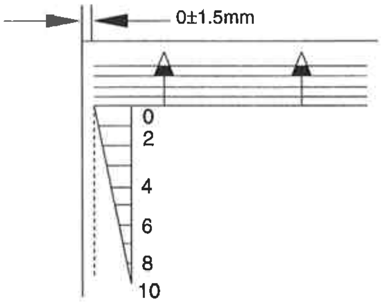


Figure 5-847

Note:
If you have adjusted the front/rear registration for the cassette, you will have to register the basic settings (✱4✱).

D. Pick-Up Vertical Path Roller Assembly

1. Removing the Pick-Up Vertical Path Roller Assembly

1) Open the upper right door and the lower right door.
2) Remove the right deck pick-up assembly/1st cassette pick-up assembly.
3) Remove the two mounting screws ①, and disconnect the connector; then, remove the pick-up vertical path roller assembly ②.

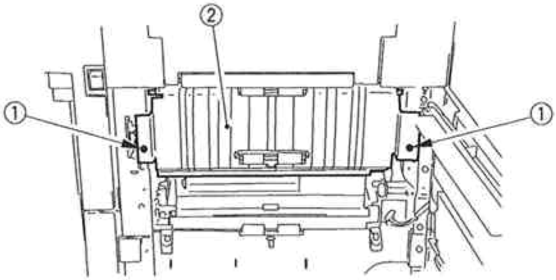


Figure 5-848

E. Registration Feeding Assembly

1. Construction

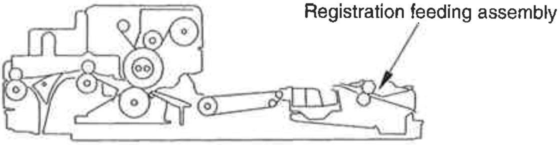


Figure 5-849

2. Removing the Registration Feeding Assembly

1) Open the front cover, and slide out the fixing/feeding unit from the copier.
2) Remove the fixing/feeding front cover, and remove the transfer/separation charging assembly.
3) Remove the two mounting screws ①, and remove the right rail support plate ②; then, remove the registration feeding assembly pressure spring ③.

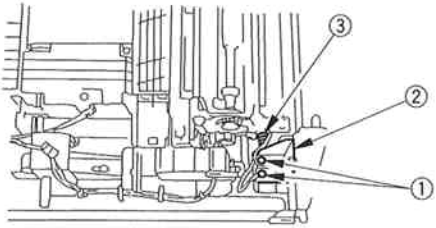


Figure 5-850

4) Remove the E-ring ④, and push in the rotating shaft ⑤ inside the machine to remove the shaft.

5) Disconnect the connector ⑥, and remove the registration feeding assembly ⑦ from the fixing/feeding unit.

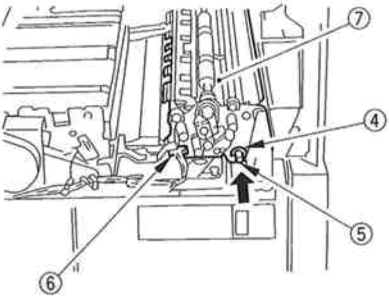


Figure 5-851

3. Removing the Registration Roller (upper rubber roller)

1) Loosen the two set screws ① on the stopper of the electromagnetic clutch at the rear.
2) Remove the spring ②, E-ring ③, spacer ④, bushing ⑤, and bearing ⑥.

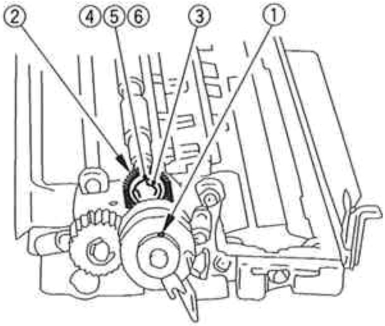


Figure 5-852

3) Remove the spring ⑦, E-ring ⑧, spacer ⑨, and bearing ⑩, and bushing ⑪.
4) Remove the pre-transfer upper front guide ⑫ and remove the registration roller (upper rubber roller) ⑬.

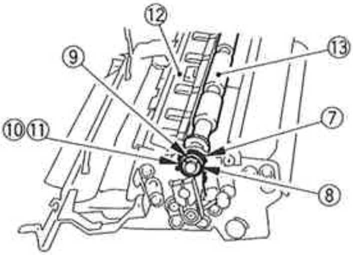


Figure 5-853

F. Feeding Assembly

1. Construction

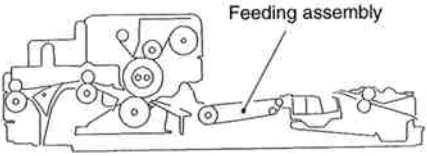


Figure 5-854

2. Removing the Fixing/Feeding Unit

1) Remove the front door, open the hopper assembly, and remove the power supply switch assembly cover; then, close the hopper assembly.
2) Slide out the fixing/feeding unit.
3) Remove the left and right mounting screws ① (1 each), and remove the fixing/feeding unit stopper ②.

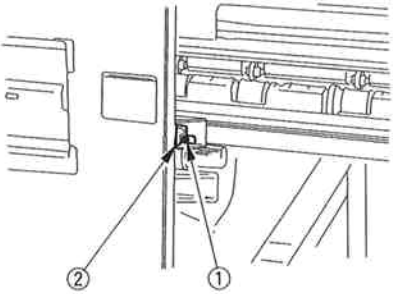


Figure 5-855 (left stopper)

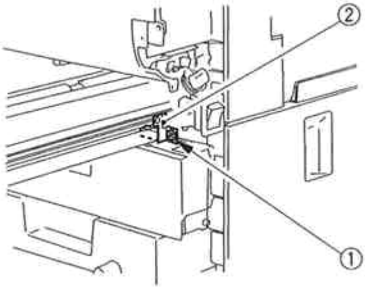


Figure 5-856 (right stopper)

4) Lift the fixing/feeding unit off the copier.

Caution:
Take care. The fixing/feeding unit weighs about 15 kg.

3. Removing the Feeding Belt

1) Lift the fixing/feeding unit off the copier.
2) Remove the fixing/feeding front cover.
3) Remove the E-ring ①, spacer ②, and bearing ③ at the front.

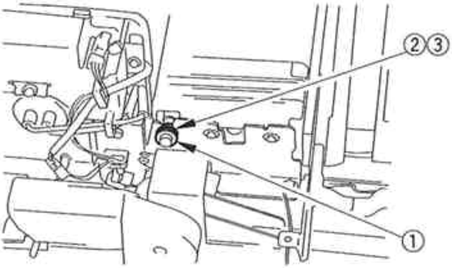


Figure 5-857

4) Remove the E-ring ③ and two mounting screws ④ at the rear.

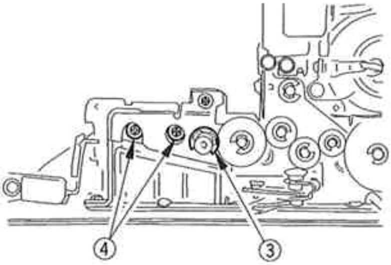


Figure 5-858

5) Remove the E-ring ⑤, gear ⑥, and pin ⑦ at the rear.
6) Remove the E-ring ⑧ and bearing ⑨ at the rear.

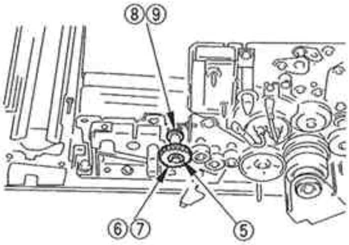


Figure 5-859

7) Remove the three harness retainers ⑩ and the two edge saddles ⑪; then, free the connector ⑫ from the harness, and remove the screw ⑬ to remove the cord guide ⑭.

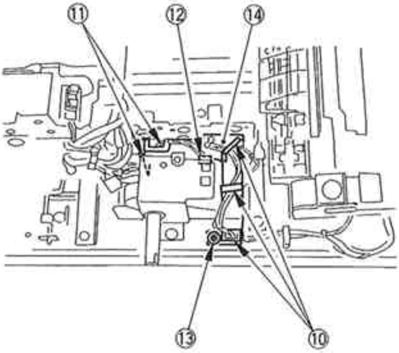


Figure 5-860

8) Remove the two screws ⑮, and remove the handle support plate ⑯.

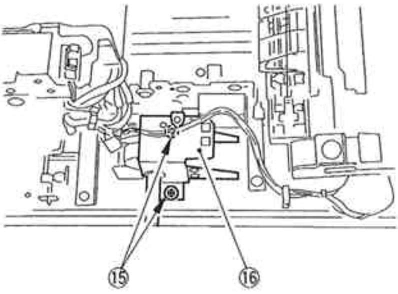


Figure 5-861

9) Remove the two mounting screws ⑰ at the front and the rear; then, remove the feeding belt unit ⑱.

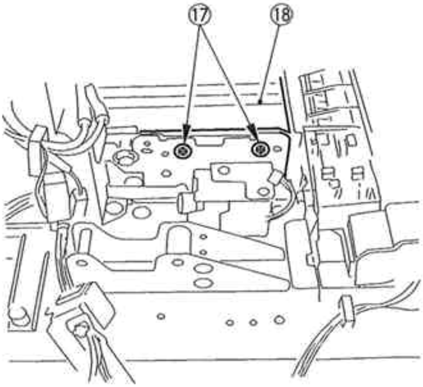


Figure 5-862 (front)

10) Remove the screw ⑳, and remove the feeding upper plate S ⑲; thereafter, remove the feeding belt ㉑ and the postcard belt ㉒.

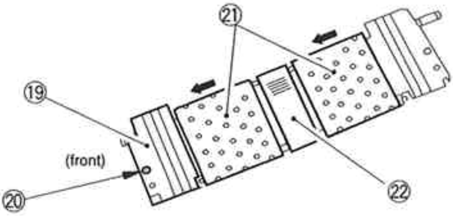
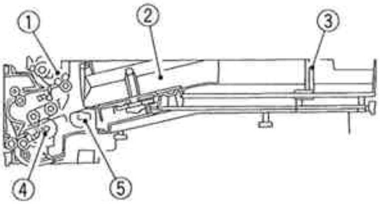


Figure 5-863

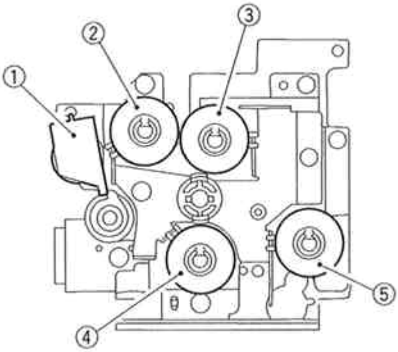
G. Holding Tray Assembly

1. Construction



① Holding tray inlet assembly
② Side guide plate
③ Y direction guide plate
④ Re-pick up assembly
⑤ Re-pick up roller

Figure 5-864 (cross section)



① Holding tray re-pick up roller (D-cut roller) solenoid (SL6)
② Holding tray reversing clutch (CL4)
③ Holding tray forward clutch (CL5)
④ Holding tray separation clutch (CL6)
⑤ Holding tray registration clutch (CL3)

Figure 5-864a (rear view)

2. Removing the Holding Tray Assembly from the Copier

1) Open the front cover.
2) Remove the fixing/pre-feeding cover.
3) Slide out the holding tray assembly to the front and out of the copier.

3. Removing the Holding Tray Re-Pick Up Assembly

1) Slide out the holding tray assembly to the front and out of the copier.
2) Remove the screw ③ (1 each), and remove the inlet assembly front upper cover ① and the inlet assembly rear cover ②; then, remove the two screws ⑤ and disconnect the two connectors ⑥ to remove the side guide plate ④.

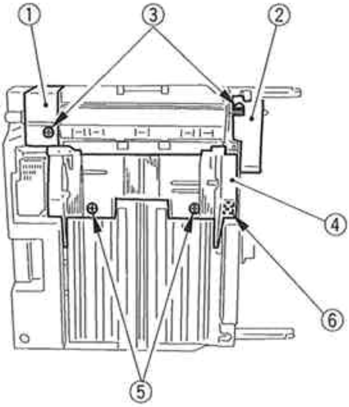


Figure 5-865

3) Remove the three mounting screws ⑦ (front).

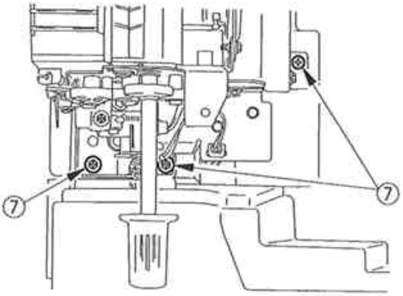


Figure 5-866 (front)

4) Remove the three mounting screws ⑧ (front), and disconnect the two connectors ⑨ while lifting the holding tray re-pick up assembly; then, remove the holding tray re-pick up assembly ⑩.

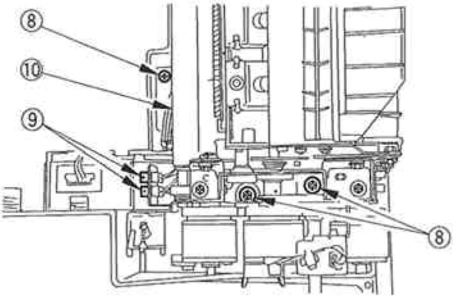


Figure 5-867 (rear)

4. Removing the Holding Tray Registration Paper Sensor

1) Open the front cover.
2) Slide out the holding tray assembly to the front and out of the copier.
3) Remove the holding tray re-pick up assembly.
4) Remove the two mounting screws ①, and remove the registration paper sensor assembly ②.

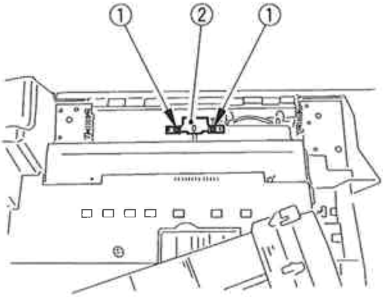


Figure 5-868

5. Removing the Re-Pick Up Roller

1) Open the front cover.
2) Slide out the holding tray assembly to the front.
3) Remove the mounting screw ① (1 each), and remove the two pick-up rollers ②.

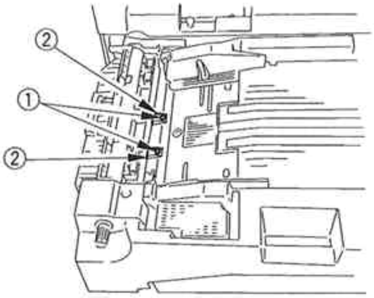


Figure 5-869

6. Removing the Holding Tray Driver PCB

1) Open the front cover.
2) Slide out the holding tray to the front and then out of the copier.
3) Turn over the holding tray assembly.
4) Remove the two mounting screws ①, and remove the holding tray driver PCB cover ②.

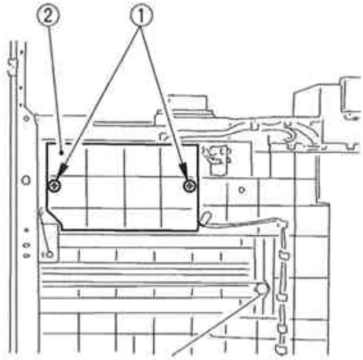


Figure 5-870

5) Remove the two mounting screws ③, and disconnect the nine connectors ④ (J201, J202, J203, J204, J205, J207, J208, J209, J210); then, remove the holding tray driver PCB ⑤.

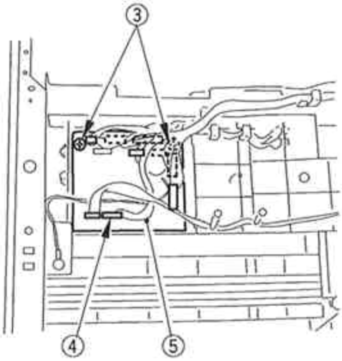


Figure 5-871

7. Removing the Holding Tray Y Motor

1) Slide out the holding tray assembly to the front, and remove the copier.
2) Turn over the holding tray assembly.
3) Remove the two mounting screws ①, and remove the right rail ②.

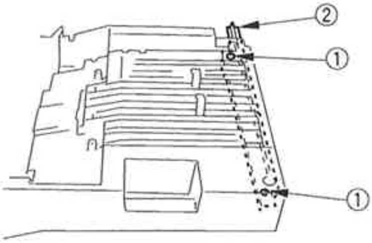


Figure 5-872

4) Turn over the holding tray assembly.
5) Remove the E-ring ③, flange ④, and belt ⑤.

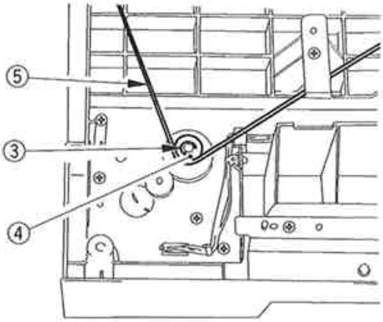


Figure 5-873

6) Remove the two mounting screws ⑥, and turn over the holding tray Y motor assembly ⑦; then, disconnect the connector 1.

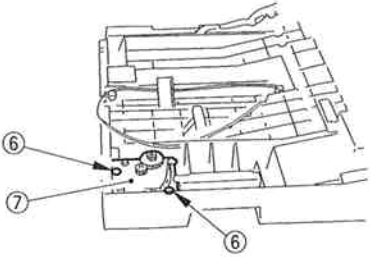


Figure 5-874

7) Remove the two mounting screws, and remove the holding tray Y motor.

8. Removing the Y Motor Home Position Sensor

1) Slide the holding tray to the front and out of the copier.
2) Remove the right rail, and turn over the holding tray.
3) Remove the mounting screw ①, and remove the Y motor home position sensor assembly ②.

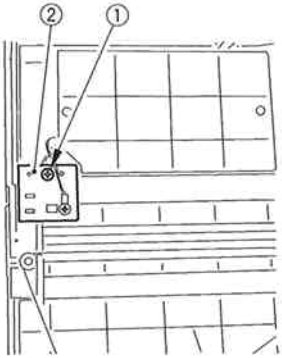


Figure 5-875

9. Removing the Holding Tray Inlet Assembly

1) Remove the mounting screw ①, and remove the inlet assembly upper front cover ②.

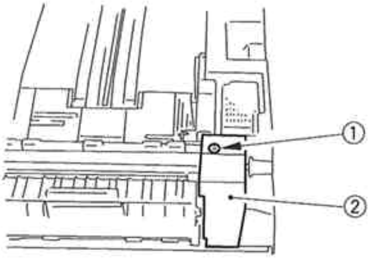


Figure 5-876

2) Remove the mounting screw ③, and remove the inlet assembly upper rear cover ④.

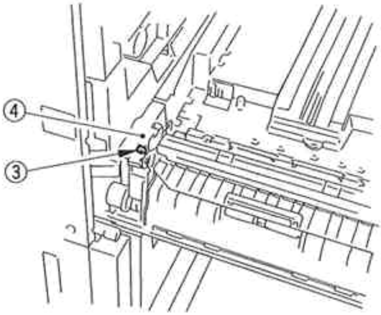


Figure 5-877

3) Remove the two mounting screws ⑤, and remove the inlet assembly ⑥.

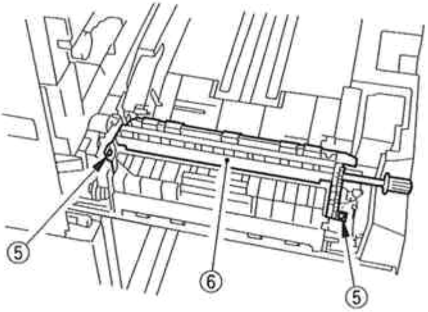


Figure 5-878

10. Removing the Feeding Roller/Separation Belt Assembly

1) Slide out the holding tray assembly to the front.
2) Remove the holding tray inlet assembly.
3) Remove the mounting screw ①.

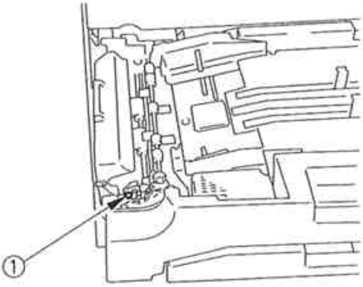


Figure 5-879

4) While opening the left cover ②, remove the feeding roller/separation belt assembly ③.

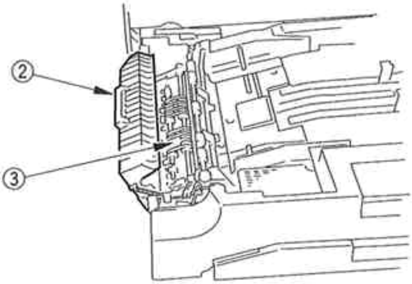


Figure 5-880

11. Removing the Feeding Roller

1) Remove the feeding roller/separation belt assembly.
2) Remove the stop ring ① and the bushing ② at the front.

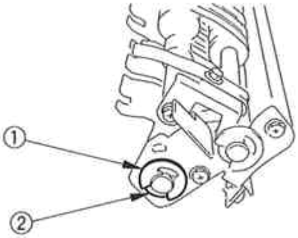


Figure 5-881

3) Remove the stop ring ③, gear ④, and bushing ⑤ at the rear.
4) Remove the roller ⑥ from the feeding roller assembly.

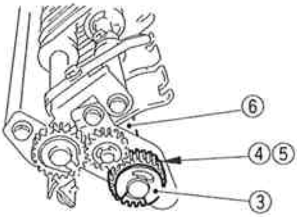


Figure 5-882

12. Removing the Separation Belt Assembly

1) Remove the feeding roller/separation belt assembly.
2) Remove the stop ring ① and the bushing ② at the front.

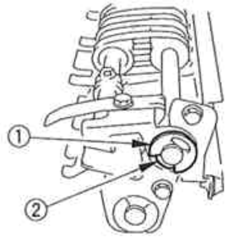


Figure 5-883

3) While lifting the front of the separation belt assembly, shift it to the rear to remove.
4) Remove the belt from the separation belt assembly.

13. Adjusting the Pressure of the Separation Roller of the Holding Tray

Turn the separation roller adjusting roll so that the distance to the shaft is 32.7 ±0.1 mm.

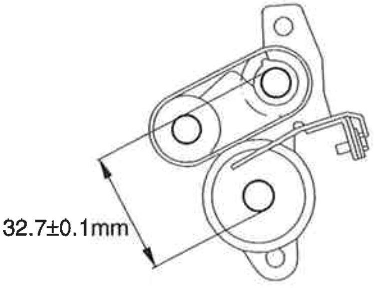


Figure 5-884

14. Position of the Holding Tray Paper Deflecting Plate Drive Solenoid

Install the solenoid so that its stroke (gap between the rubber silencer and the end of the solenoid) is 5.0 ±0.3 mm.

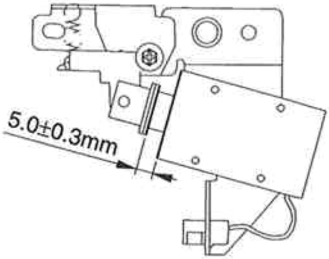


Figure 5-885

15. Removing the Side Guide Plate

1) Mark the position of the side plate assembly with a scribe. (See Figure 5-894.)
2) Remove the two mounting screws ①, and disconnect the two connectors; then, remove the side guide plate assembly ②.

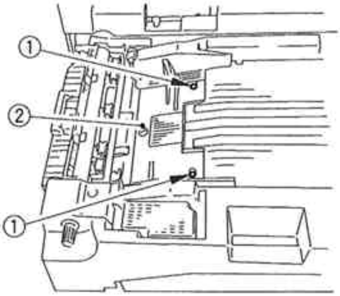


Figure 5-886

16. Removing the Holding Tray X Motor

1) Remove the side guide plate assembly.
2) Remove the mounting screw, and remove the motor cover.
3) Remove the two mounting screws ①, and disconnect the connector; then, remove the motor ②.

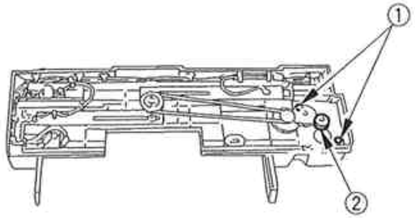


Figure 5-887

17. Removing the Holding Tray Re-Circulating Motor

1) Remove the side guide plate assembly.
2) With the paper jogging guide plate fully open, mark the position of the paper guide plate with a scribe. (See Figure 5-893.)
3) Remove the three mounting screws ①, and disconnect the connector ②; then, remove the rear guide plate assembly ③.

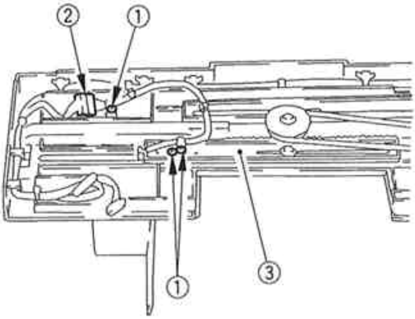


Figure 5-888

4) Remove the mounting screw ④, and remove the motor assembly ⑤.

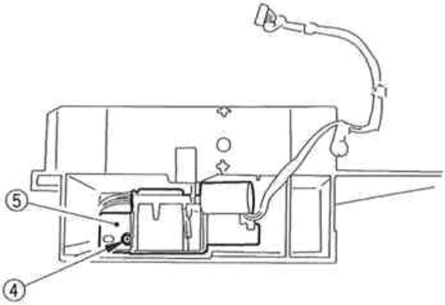


Figure 5-889

18. Removing the Holding Tray Paper Jogging Solenoid

1) Remove the side guide plate.
2) With the paper jogging guide plate fully open, mark the position of the paper guide plate assembly with a scribe.
3) Remove the three mounting screws ①, and disconnect the connector ②; then, remove the front guide plate assembly ③.

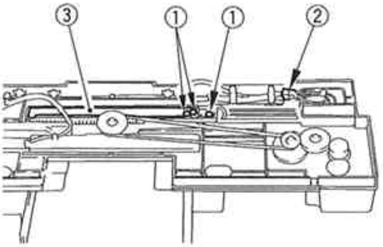


Figure 5-890

4) Remove the mounting screw ④, and remove the cover ⑤.

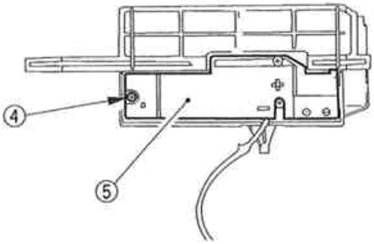


Figure 5-891

5) Remove the two mounting screws ⑥, two grip rings ⑦, and spring pin ⑧; then, remove the solenoid ⑨.

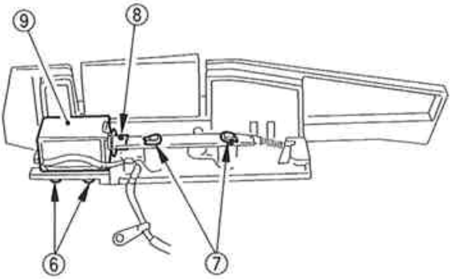


Figure 5-892

19. Installing the Holding Tray Paper Jogging Guide Plate Assembly

Mark the position of the paper jogging guide plate assembly with a scribe, and install it along the marking.

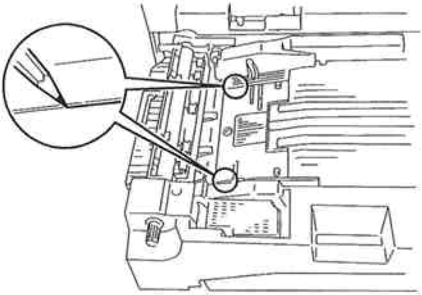


Figure 5-893

20. Installing the Holding Tray Assembly Side Guide Plate Assembly

Mark the position of the side guide plate assembly with a scribe, and install it along the marking.

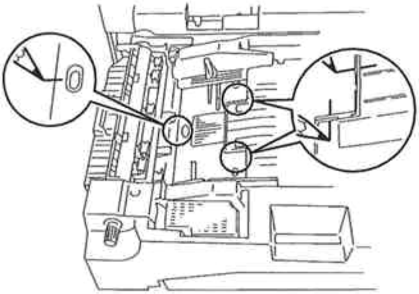


Figure 5-894

21. Attaching the Timing Belt for the Holding Tray Assembly Paper Jogging Guide Plate

Butt the rack plate of the paper jogging guide plate against section A (open state), and attach the timing belt.

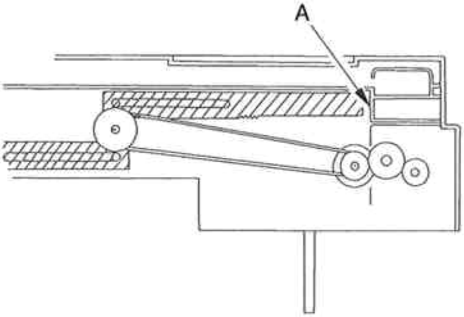


Figure 5-895

22. Position of the Holding Tray Paper Jogging Solenoid

When installing the solenoid, be sure that the stroke (between the rubber silencer and the end of the solenoid) is 1.5 ±0.3 mm.

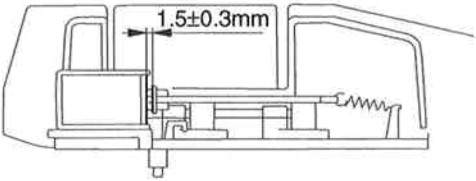


Figure 5-896

H. Holding Tray Feeding Assembly

1. Removing the Holding Tray Feeding Assembly from the Copier

1) Open the front cover, and slide out the holding tray feeding assembly to the front.
2) Remove the three mounting screws ①, and remove the holding tray feeding front cover ②.

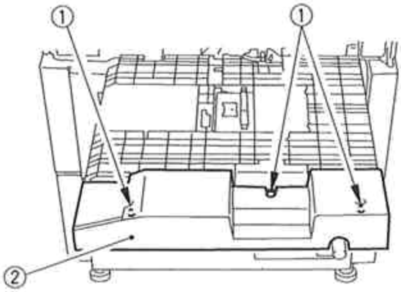


Figure 5-897

3) Remove the five mounting screws ③ and the two metal fixings ④; then, remove the holding tray feeding assembly ⑤ from the rail.

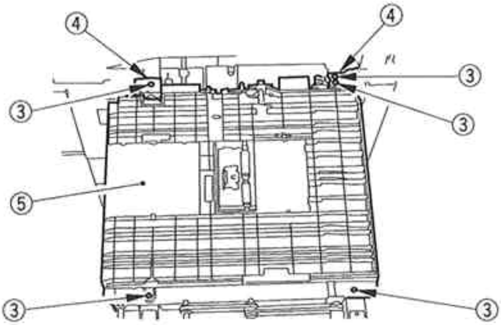


Figure 5-898

2. Removing the Sensor from the Holding Tray

1) Open the front cover, and slide out the holding tray feeding assembly to the front.
2) Remove the mounting screw ① and the metal fixing ②; then, remove the holding tray feeding sensor cover ③ from the bottom of the holding tray feeding assembly.

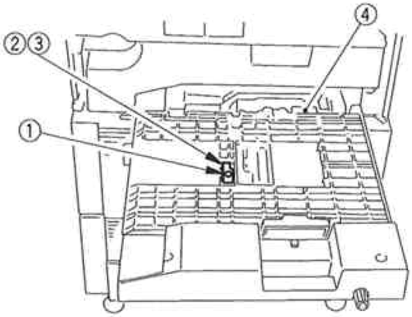


Figure 5-899

Caution:
Do not open the holding tray upper feeding guide more than it is designed to open; otherwise, the stopper ④ will be damaged.

3) Remove the two mounting screws, and disconnect the connector; then, remove the sensor assembly from the holding tray feeding assembly.

Caution:
When installing the holding tray feeding sensor cover, be sure that the two springs are in the bosses behind the holding tray upper feeding guide.

CHAPTER 6

FIXING SYSTEM

This chapter explains the principles used to fuse toner images to transfer medium in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.

I. BASIC OPERATIONS 6-1
  - A. Outline 6-1
  - B. Fixing Drive Assembly 6-2
  - C. Controlling the Fixing Temperature 6-3
  - D. Reciprocating Mechanism for the Main Thermistor (TH1) 6-8
  - E. Reciprocating Mechanism for the Upper Separation Claw 6-9
  - F. Fixing Heater SSR Error Detection Circuit 6-10
  - G. Locking the Fixing/Feeding Unit....6-12
  - H. Error Detection Circuit 6-13

II. DISASSEMBLY AND ASSEMBLY......6-16
  - A. Fixing Assembly 6-16
  - B. Delivery Assembly 6-33

I. BASIC OPERATIONS

A. Outline

The upper and lower rollers of the fixing assembly and the delivery roller are driven by the main motor (M1) through clutches. (See Figure 6-101.)

The upper roller is equipped with two built-in heaters; the sub heater is turned on during WMUP after power-on, and the main heater is turned on/off during WMUP and thereafter for temperature control. (See Figure 6-102.)

The surface temperature of the upper roller is monitored by the main thermistor (TH1) and is controlled by the DC controller so that it remains at the target value.

The cleaning belt for the upper fixing roller is operated by a one-way clutch method using a solenoid (SL14; fixing cleaning belt drive solenoid).

You can display the message that warns against the running out of the cleaning belt in service mode after the fixing cleaning belt drive solenoid (SL14) has turned on 250,000 times.

Further, you can check the cumulative number of times the fixing cleaning belt drive solenoid has turned on in service mode (*6*; 'WEB').

The length of the cleaning belt is monitored by keeping the cleaning belt detecting lever in contact with the belt. The cleaning belt detecting lever shifts as the belt is used and fed, and 'E005' is indicated on the control panel when it blocks the sensor PS11.

The delivery assembly is equipped with a delivery paper deflecting plate; the DC controller PCB generates the delivery flapper solenoid drive signal while causing two-sided/overlay copies to turn ON the delivery flapper solenoid (SL2), thereby driving the delivery flapper and, as a result, sending copy paper to the holding tray.

The cleaning belt drive solenoid (SL14) is used to trigger the external delivery sensor (PS10).

Number of Activations (SL14)
- twice for large-size copy
- once for small-size copy

Reference:

1. Heater
   120V model : 790 W (main) + 410 W (sub)
   220/240 model : 1200 W (main)
2. Thermal switch: 240 ±10°C

B. Fixing Drive Assembly

If a jam occurs in the fixing delivery assembly, the DC controller PCB generates the fixing drive stop signal to turn ON the fixing drive stop solenoid (SL3), thereby immediately stopping the fixing roller.

The belt used to clean the upper fixing roller is taken up gradually when the cleaning belt take-up arm is moved up and down by the cleaning belt drive solenoid (SL14).

The cleaning belt guide serves to keep the area of contact between the fixing roller and the cleaning belt large to prevent offset.

The fixing assembly inlet guide is shifted by turning ON/OFF the fixing assembly inlet guide drive solenoid (SL16), thereby changing its height and, ultimately, improving paper feeding.

The height differs at a point of about 130 mm after copying operation starts and the registration roller has rotated according to the following conditions:

- High if the length of the copy paper is equivalent to B5R or larger.
- Low if the length of the copy paper is shorter than the above.

In the case of the multifeeder (free size), the following applies to suit various lengths:

- High when starting copying operation.
- The same control as the above will be used by measuring the length of the first sheet when it moves past the registration paper sensor (PS23).

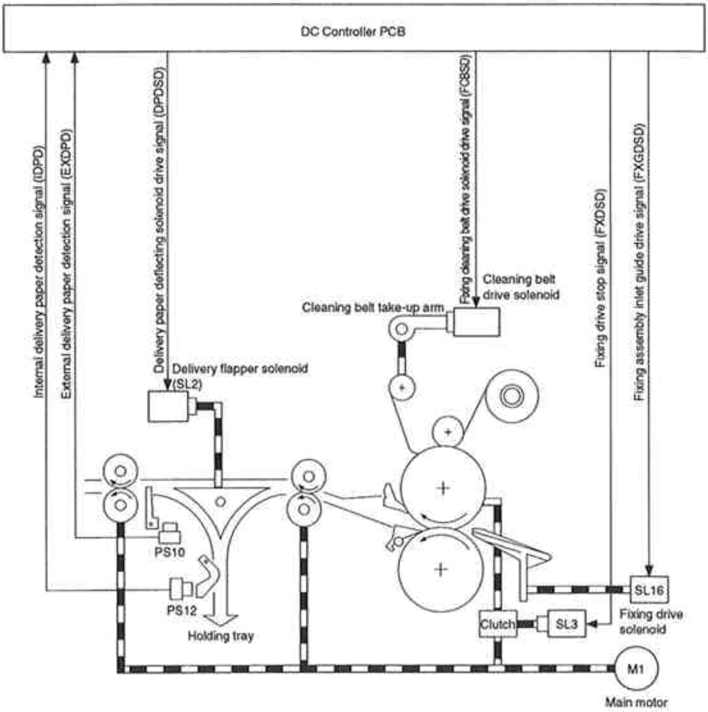

DC Controller PCB
Internal delivery paper detection signal (IDPD)
External delivery paper detection signal (EXDPD)
Delivery paper deflecting solenoid drive signal (DPDSD)
Fixing cleaning belt drive solenoid drive signal (FCBSD)
Fixing drive stop signal (FXDSD)
Fixing assembly inlet guide drive signal (FXGDSD)
Cleaning belt drive solenoid
Cleaning belt take-up arm
Delivery flapper solenoid (SL2)
PS10
PS12
Holding tray
Clutch
SL3
SL16
Fixing drive solenoid
M1
Main motor

Figure 6-101

C. Controlling the Fixing Temperature

The surface temperature of the upper fixing roller is monitored by the main thermistor (TH1), and the output of the thermistor is sent to the microprocessor.

Using the output, the microprocessor varies the main heater drive signal (MHRD) and the sub heater drive signal (SHRD) to control the fixing temperature.

The rear of the copier's upper fixing roller is equipped with a sub thermistor (TH2) to monitor overheating.

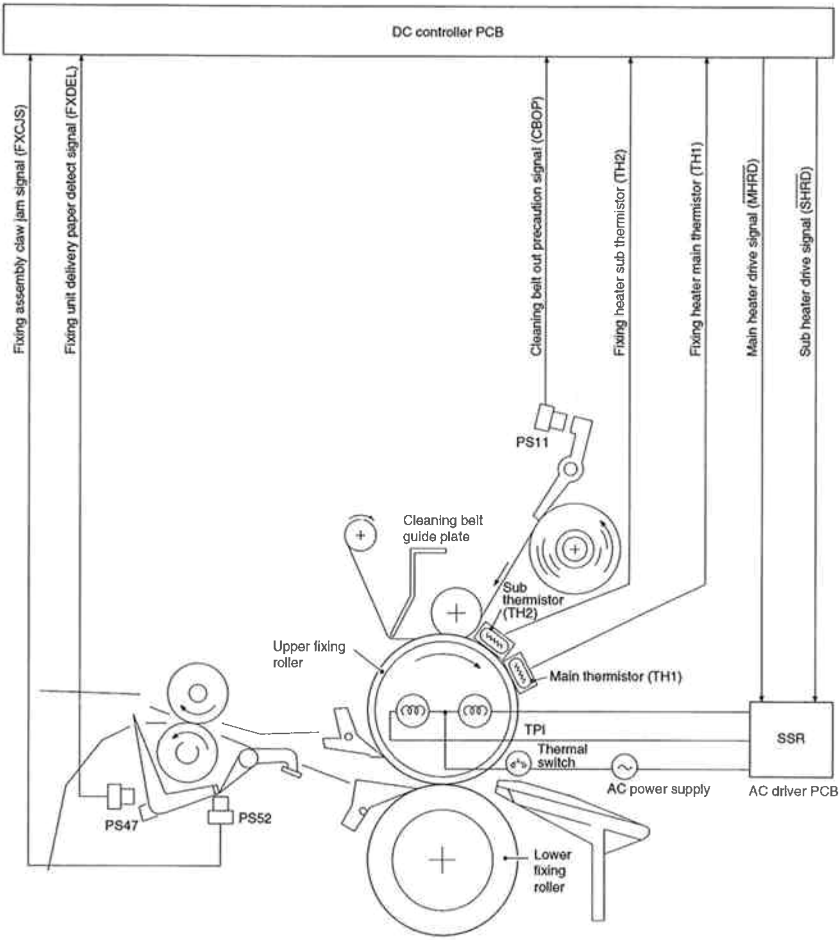

DC controller PCB
Fixing assembly claw jam signal (FXCJS)
Fixing unit delivery paper detect signal (FXDEL)
Cleaning belt out precaution signal (CBOP)
Fixing heater sub thermistor (TH2)
Fixing heater main thermistor (TH1)
Main heater drive signal ($\overline{\text{MHRD}}$)
Sub heater drive signal ($\overline{\text{SHRD}}$)
PS11
Cleaning belt guide plate
Sub thermistor (TH2)
Upper fixing roller
Main thermistor (TH1)
TPI
Thermal switch
SSR
AC power supply
AC driver PCB
PS47
PS52
Lower fixing roller

Figure 6-102

The copier uses the six types of control shown in Tables 6-101 and -102 in relation to the time that has elapsed from power-on and according to the ambient temperature.

- After 60 min from power-on and the surface of the fixing roller is 75°C,

Mode	Internal temperature	Control temperature	
		Standby	Copying
H mode M mode L mode	17°C or more 12° to 17°C 12°C	200°C 210°C 210°C	205°C 212°C 212°C

Table 6-101

- 60 min or more after power-on

Mode	Internal temperature	Control temperature	
		Standby	Copying
H mode M mode L mode	17°C or more 12° to 17°C 12°C	200°C 200°C 200°C	205°C 205°C 205°C

Table 6-102

In addition, control is also made under the following special conditions:

① Power Save Mode
When the Pre-Heat key is pressed, the following takes place (may be varied in user mode):

- Control Temperature during Pre-Heat Mode

Saving rate	Control	Recovery*
–10%	180°C	50 sec
–25%	155°C	90 sec
–50%	110°C	15 sec
None	195°C	0

*From when the Pre-Heat key is pressed once again until the beginning of STBY.

Table 6-103

② Copy Speed Down Sequence

The copier makes as many as 45 copies per minute normally. To ensure proper fixing, however, the sheet-to-sheet gap is increased if the main thermistor (TH1) on the upper fixing roller detects the following surface temperature.

Condition Down sequence	60 min from power-on	60 sec and later after
45 cpm recovery mode	170°C	175°C
40 cpu mode	165°C	170°C
35 cpu mode	160°C	165°C
Copy stop	155°C	160°C

Table 6-104

In down sequence, control is to 40 cpm and 35 cpm mode according to the surface temperature of the upper fixing roller. During the period, normal copying speed will be used once again if the surface temperature of the upper fixing roller reaches that shown in Table 6-104; however, if copying operation has been stopped once, WMUP sequence will be used until the surface temperature of the upper fixing roller reaches 195°C. (auto start)

For instance, if the aforementioned surface temperature is detected during copying operation, WMUP sequence will be started while indicating the remaining number of copies on the control panel. Then, the remaining number of copies will be made in response to a press on the Copy Start key as soon as auto start or STBY is activated.

Fxing Assembly Temperature Control Sequence

60 min after power-on with fixing roller surface temperature 75°C

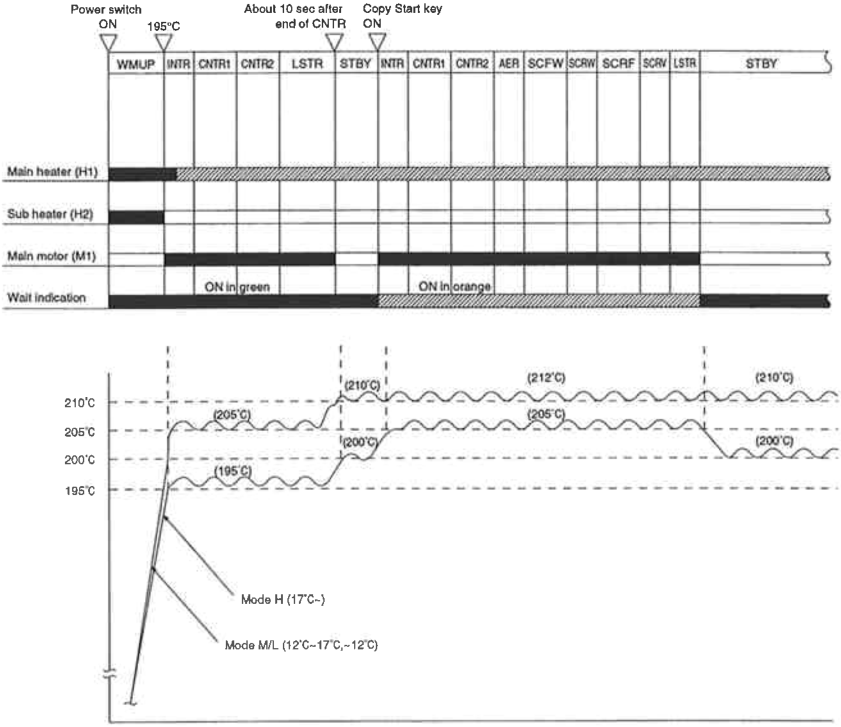
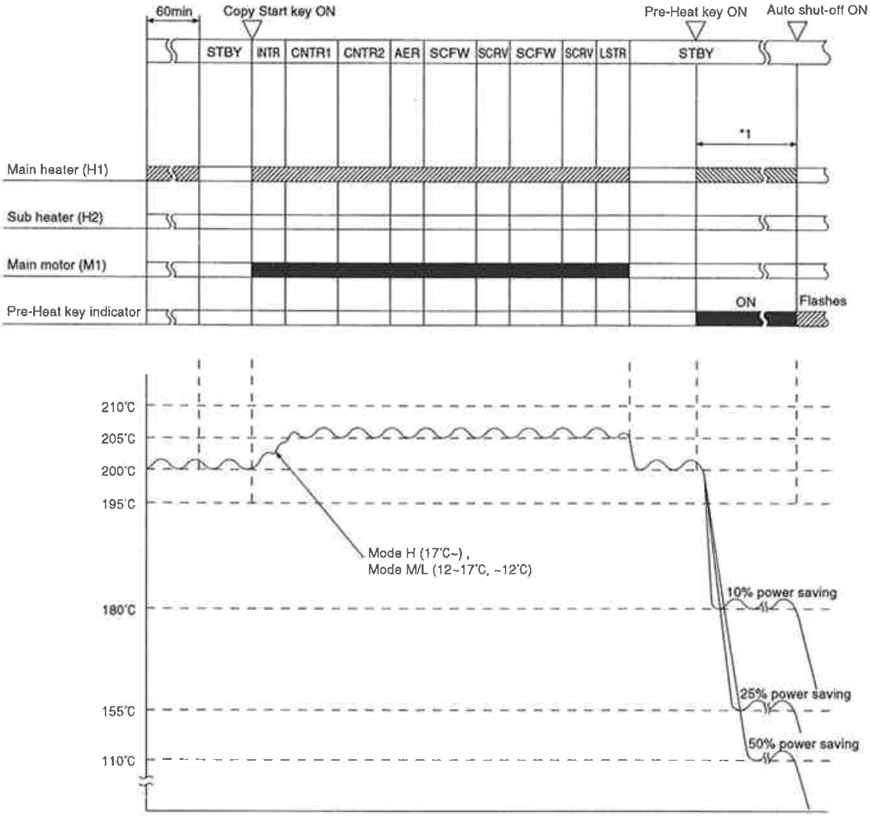

Power switch ON
195°C
About 10 sec after end of CNTR
Copy Start key ON
WMUP
INTR
CNTR1
CNTR2
LSTR
STBY
INTR
CNTR1
CNTR2
AER
SCFW
SCRW
SCRF
SCRV
LSTR
STBY
Main heater (H1)
Sub heater (H2)
Main motor (M1)
Wait indication
ON in green
ON in orange
210°C
205°C
200°C
195°C
(205°C)
(195°C)
(210°C)
(200°C)
(212°C)
(205°C)
(210°C)
(200°C)
Mode H (17°C~)
Mode M/L (12°C~17°C,~12°C)

Figure 6-103



*1: May be varied in service mode.

Figure 6-104

D. Reciprocating Mechanism for the Main Thermistor (TH1)

The main thermistor (TH1) is moved back and forth over a distance of 12 mm in the axial direction of the upper fixing roller to prevent damage to the roller.

The reciprocating cam is supplied with drive from the cleaning belt drive solenoid (SL14) through a one-way arm.

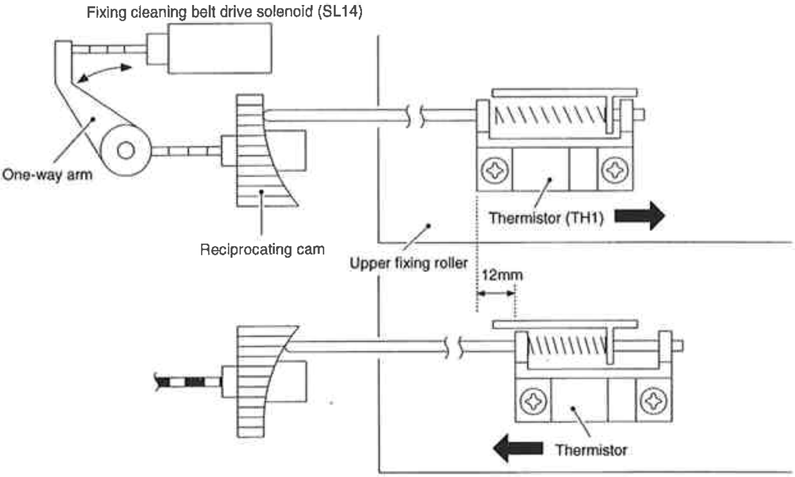

Fixing cleaning belt drive solenoid (SL14)
One-way arm
Reciprocating cam
Upper fixing roller
Thermistor (TH1)
12mm
Thermistor

Figure 6-105

E. Reciprocating Mechanism for the Upper Separation Claw

The upper separation claw is moved back and forth over a distance of 3 mm in the axial direction of the upper fixing roller to prevent damage to the roller.

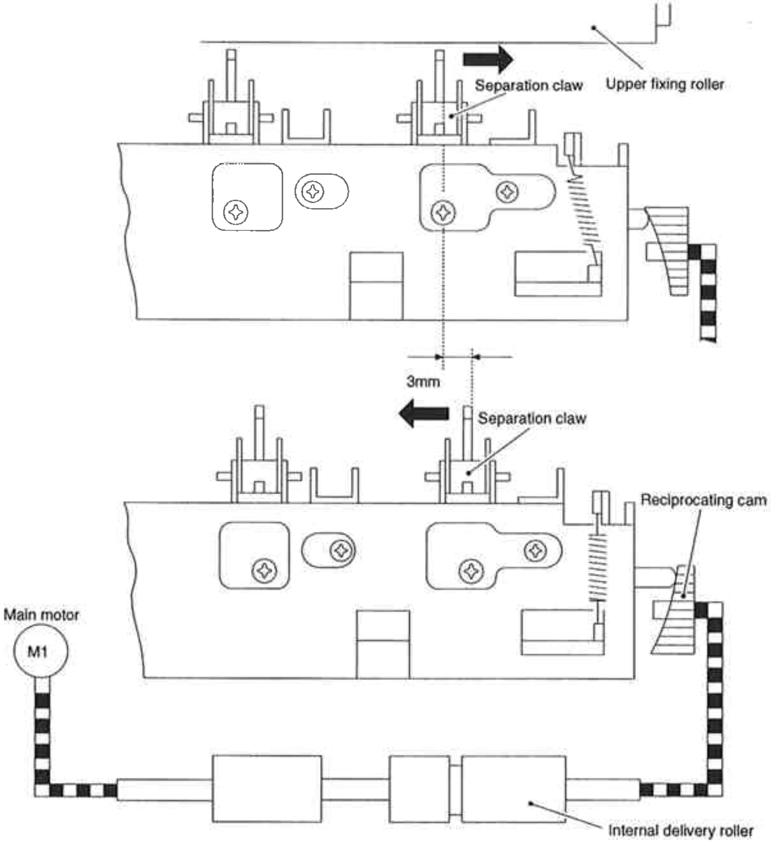

Separation claw
Upper fixing roller
3mm
Separation claw
Reciprocating cam
Main motor
M1
Internal delivery roller

Figure 6-106

F. Fixing Heater SSR Error Detection Circuit

The safety circuit for the copier's fixing heater SSR uses the following signals to identify an error:

1. Fixing main heater drive signal (MHRD)
2. Main heater ON detection signal (MHOND)

Figure 6-107 shows the main heater only, but the sub heater is controlled in the same way.

Heater ON

The CPU causes the SSRON signal to go '0', and the MHRD signal goes '1' to turn ON the heater. At this time, the fixing feeding unit detection signal (FFURLS), power switch ON detection signal (MSWD), and front door open detection signal (FDOD) are '0'.

Heater OFF

The CPU causes the SSRON signal to go '1', and the MHRD signal goes '0' to turn OFF the heater.

SSR Error

If the main heater ON detection signal (MHOND) is '1' when the CPU on the DC controller PCB is not generating the fixing main heater drive signal (MHRD), as by the gate array ①, or if the main heater ON detection signal (MHOND) is '0' when the CPU on the DC controller PCB is generating the fixing main heater drive signal (MHRD), as by the CPU ②, an SSR error is identified and the CPU on the DC controller PCB indicates an error code.

At the same time, the power switch OFF signal (PWOFF) is caused to go '0' to cut off the AC circuit. When the power switch is turned OFF, power to the heater will be cut off; however, since the DC controller PCB is supplied with power for a specific period of time (see descriptions on the power supply), the power supply PCB sends the power switch ON detection signal (MSWD) to prevent activation of the relay inside the power switch in response to the PWOFF signal.

Since the copier's main heater ON detection signal (MHOND) is '1' even under the following conditions, the SSRON signal is kept '0' to avoid wrong detection of an SSR error:

1. When the fixing/feeding unit has been slid out (FFURLS signal: 1);
2. The front door is opened (FDOD signal: 1); and
3. The power switch has been turned OFF (MSWD signal: 1).

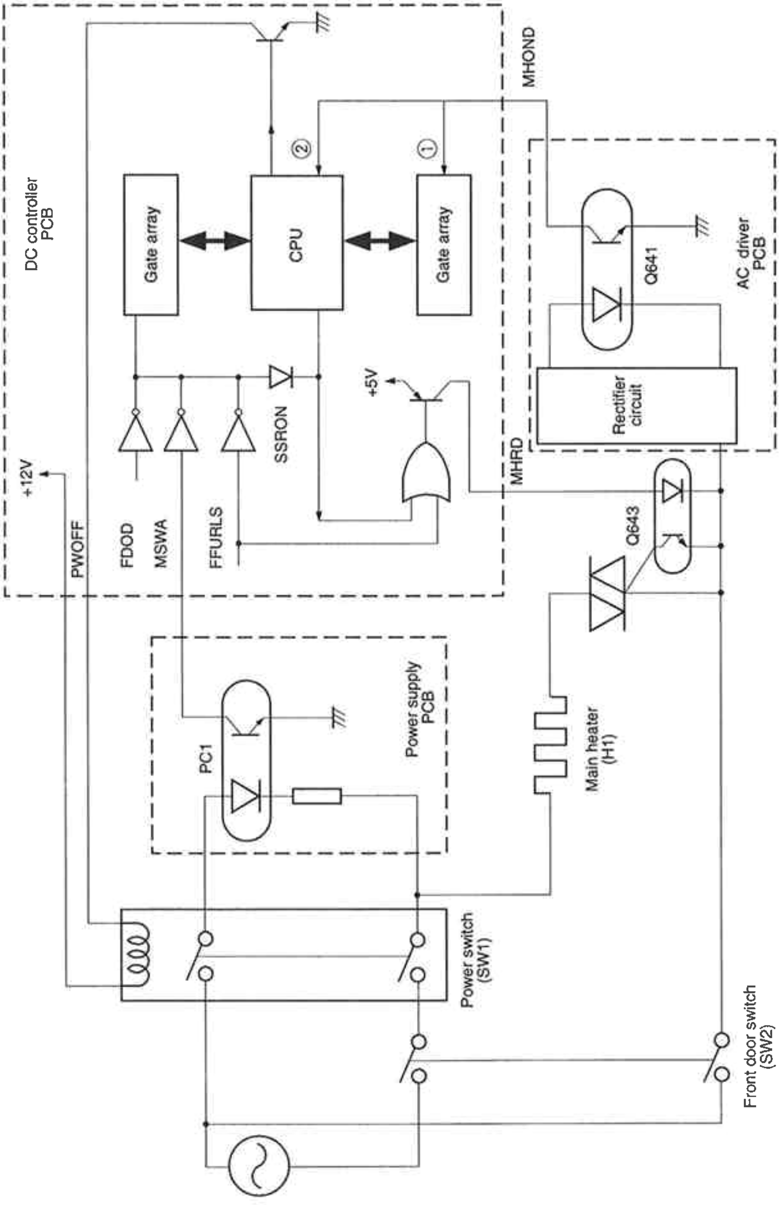

DC controller PCB
Gate array
CPU
Gate array
②
①
MHOND
+12V
PWOFF
FDOD
MSWA
FFURLS
SSRON
+5V
MHRD
Rectifier circuit
Q641
AC driver PCB
Q643
Power supply PCB
PC1
Main heater (H1)
Power switch (SW1)
Front door switch (SW2)

Figure 6-107

G. Locking the Fixing/Feeding Unit

If a jam straddles the fixing/feeding unit and the holding tray unit when the copier stops because of a jam, i.e., paper exists over the internal delivery sensor (PS12), the main motor (M1) and the fixing/feeding unit locking solenoid (SL13) are turned ON for about 3 sec.

This way, the locking lever is lowered from the fixing/feeding unit to the rear of the holding tray unit.

If the fixing/feeding unit is slid out for jam removal, the holding tray unit will also be slid out to prevent tearing of the straddling paper.

The locking is released when the main motor rotates during initial rotation after jam removal.

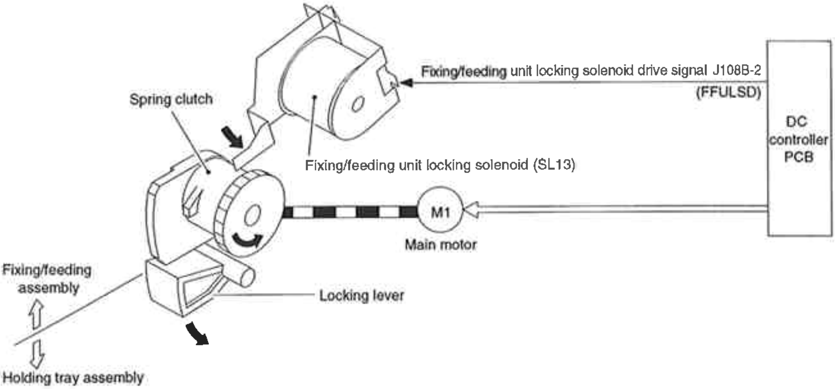

Fixing/feeding unit locking solenoid drive signal J108B-2
(FFULSD)
Spring clutch
DC controller PCB
Fixing/feeding unit locking solenoid (SL13)
M1
Main motor
Fixing/feeding assembly
Locking lever
Holding tray assembly

Figure 6-108

H. Error Detection Circuit

1. Outline

Figure 6-109 is a control block diagram of the error detection circuit, which has the following functions:

a. monitoring the activation of the scanning lamp (LA1).
b. monitoring the activation of the fixing heaters (main, H1; sub, H2).
c. monitoring the rotation of each motor in normal reading and stream reading.

Each of these functions is executed by the gate arrays of the DC controller PCB.

The condition of each load is checked by the gate arrays; and after checking for the presence/absence of an error, they send the results to the master CPU.

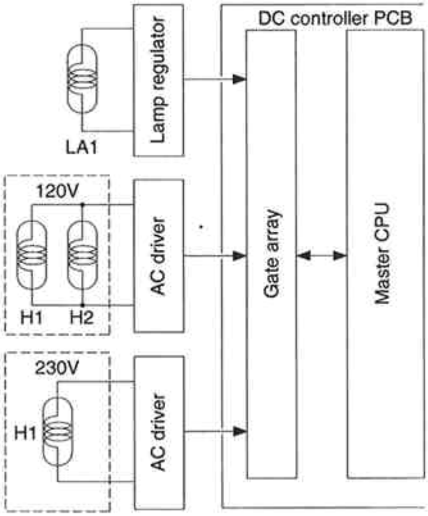

DC controller PCB
Lamp regulator
LA1
120V
H1
H2
AC driver
230V
H1
AC driver
Gate array
Master CPU

Figure 6-109

2. Scanning Lamp Error Activation Detection Circuit

The gate array is designed to receive the scanning lamp ON signal (CVRON) and the scanning lamp ON detection signal (CVRACTIVE). It detects an error if the scanning lamp is ON in the absence of the scanning lamp ON signal.

In such cases, the gate array informs the master CPU of the error detection of the scanning lamp and, at the same time, generates the power switch OFF signal.

In this condition, the relay in the power switch is powered to turn OFF the power switch, thereby stopping the AC power supply (error auto power-off).

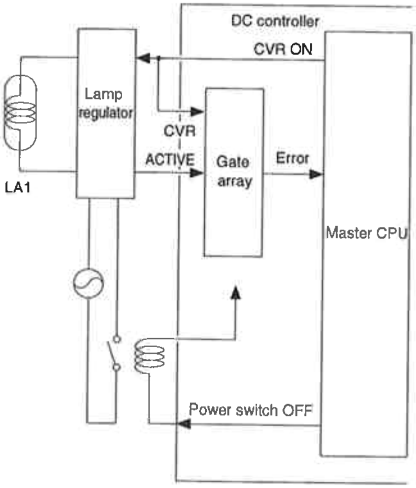

DC controller
CVR ON
Lamp regulator
CVR ACTIVE
Gate array
Error
Master CPU
LA1
Power switch OFF

Figure 6-110

3. Fixing Heater Error Activation Detection Circuit

The gate array generates the fixing heater ON signal (SSRON) and receives the fixing heater ON detection signal (SSR ACTIVE). An error is detected if the fixing heater is ON in the absence of the fixing heater ON signal.

In such cases, the gate array informs the master CPU of the error activation of the fixing heater and, at the same time, generates the power switch OFF signal.

The error signal (FUSER TEMP ERROR) of the thermistor used to monitor the temperature of the fixing roller is also sent to the gate array. The gate array generates the power switch OFF signal also when the surface temperature of the fixing roller increases abnormally.

When the power switch OFF signal is generated, the relay in the power switch becomes powered to turn OFF the power switch, thereby stopping the AC power supply (auto power-off).

Further, if the fixing assembly sub thermistor (TH2) detects overheating (230 ±10°C), the DC controller PCB will indicate 'E001' on the control panel and cut off the supply of AC power.

The fixing assembly sub thermistor is checked for an open circuit; upon detection, the DC contoroller PCB will display 'E000' on the control panel for 5 sec and cut the supply of AC power.

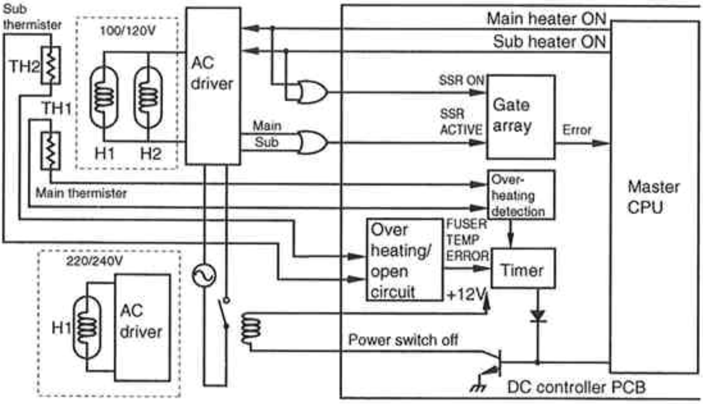

Sub thermister
100/120V
TH2
TH1
H1
H2
AC driver
Main
Sub
Main thermister
220/240V
H1
AC driver
Main heater ON
Sub heater ON
SSR ON
SSR ACTIVE
Gate array
Error
Over-heating detection
Master CPU
Over heating/ open circuit
FUSER TEMP ERROR
Timer
+12V
Power switch off
DC controller PCB

Figure 6-111

II. DISASSEMBLY AND ASSEMBLY

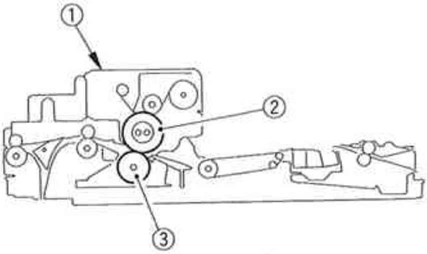
This section explains mechanical characteristics and describes how to disassemble/assemble the machine.

Be sure to observe the following whenever disassembling/assembling the machine:

1. ⚠ Disconnect the power plug before starting the work.
2. Unless otherwise shown, assemble the parts by reversing the steps given to disassemble them.
3. Identify each screw by type (length, diameter) and location.
4. A washer is used for one of the mounting screws on the rear cover to protect against static electricity; be sure to use the washer when assembling the part.
5. A washer is used for some mounting screws (for grounding wire, varistor) to ensure correct electrical continuity; be sure to use the washer when assembling the part.
6. As a rule, do not operate the machine while any of its parts are removed.
7. When sliding out the duplexing unit or the fixing assembly, be sure to turn off the front door switch or the power switch.

A. Fixing Assembly

1. Construction



① Upper fixing unit
② Upper roller
③ Lower roller

Figure 6-201

2. Locking Mechanism

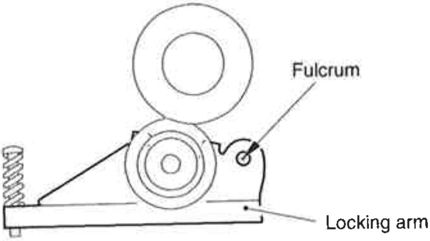


Figure 6-202

3. Removing the Fixing Cleaning Belt

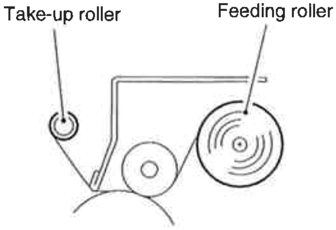


Figure 6-203

1) Slide out the fixing/feeding unit from the copier.
2) Remove the feeding/feeding front cover.
3) Remove the mounting screw ①, and remove the fixing upper cover ②.

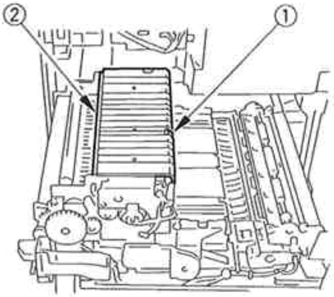


Figure 6-204

4) Remove the two mounting screws ③ used to hold the fixing cleaning belt assembly in place, and open the top of the fixing cleaning belt assembly ④ in the upward direction.

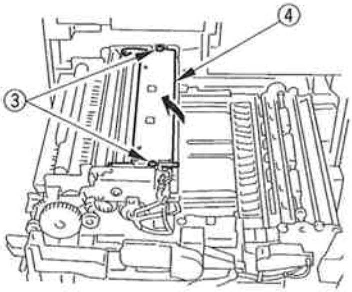


Figure 6-205

5) Remove the cleaning belt feeding roller ⑤ and the cleaning roller take-up roller ⑥ while pushing them to the rear.

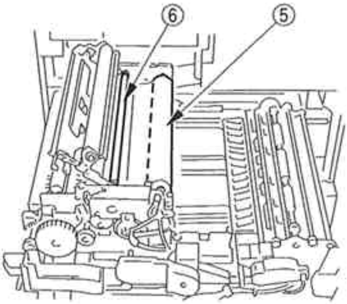


Figure 6-206

Caution:
When cleaning the silicone oil pan, be sure to remove the silicone oil collecting at the bottom of the cleaning belt feeding roller.

4. Installing the Fixing Cleaning Belt

Install the fixing cleaning belt by reversing the steps used to remove it with the following in mind:

1) Wind the cleaning belt two to three times around the cleaning belt take-up roller ①. When doing so, be sure that the arm guide plate ② is outside the take-up roller. Check that the area where the roller comes into contact is impregnated with oil.

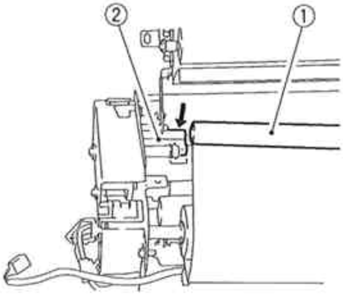


Figure 6-207

Caution:
Check to make sure that the cleaning belt is not wound at an angle and it is free of slack or wrinkles.
In addition, be sure that the fixing cleaning belt is installed in the direction (feeding/take-up) shown in Figure 6-203.

2) After installing the fixing cleaning belt, move the one-way lever ③ in the direction of the arrow shown in Figure 6-208, and turn it until all the slack has been removed.

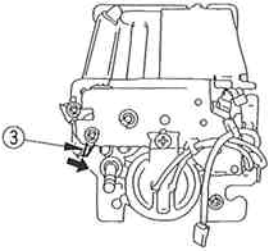


Figure 6-208

Caution:
Be sure to return the count reading of 'WEB' (*6*) to '0' whenever you have replaced the fixing cleaning belt.

5. Removing the Upper Fixing Unit

1) Slide out the fixing/feeding unit from the copier.
2) Remove the fixing/feeding front cover.
3) Remove the fixing upper cover.
4) Open the fixing delivery assembly ①.

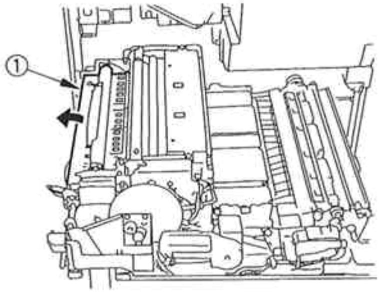


Figure 6-209

5) Remove the two mounting screws ②, and remove the flywheel mount ③.

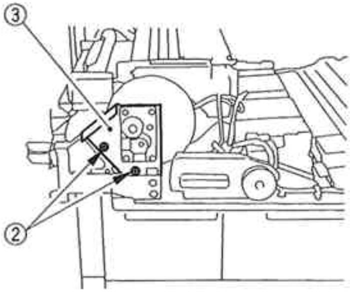


Figure 6-210

6) Remove the E-ring ④, and remove the flywheel ⑤.

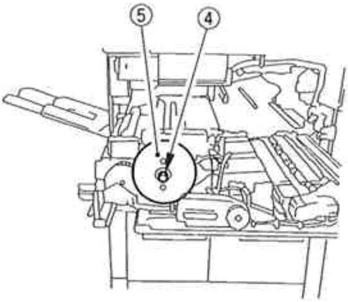


Figure 6-211

7) Remove the fixing cleaning belt, and clean the silicone oil pan; then, remove the two mounting screws ⑥ and the two harness retainers ⑦, and disconnect the three connectors ⑧.

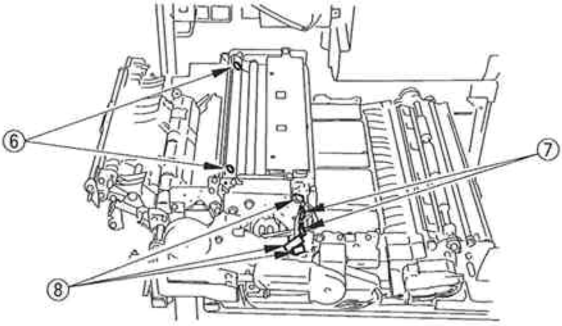


Figure 6-212

8) Open the upper feeding unit ⑨ slightly, and remove it in the upper left direction; then, place it on a desk.

Caution:
Draw out the silicone oil in advance from the silicone oil pan to avoid spilling it during work.

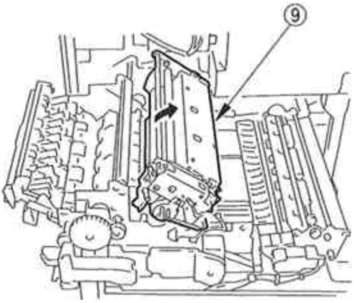


Figure 6-213

6. Removing the Fixing Heater

1) Slide out the fixing/feeding unit from the copier.
2) Remove the fixing/feeding front cover.
3) Open the fixing delivery assembly.
4) Remove the flywheel.
5) Remove the upper fixing cover, and remove the fixing cleaning belt; then, clean the silicone oil pan, and remove the fixing upper unit.
6) Pull out the faston ① from the front of the hater (main heater, sub heater).
7) Remove the mounting screw ②, and remove the front electrode support plate spring ③.

8) Free the two cables ④ at the front of the heater from the wire saddle ⑤.

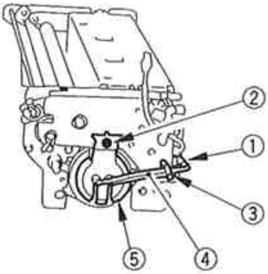


Figure 6-214

9) Remove the two fastons ⑥ from the rear.

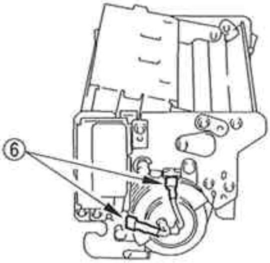


Figure 6-215

10) Pull out the main heater and the sub heater from the fixing assembly while taking care not to damage them.

Caution:
The side plate of the upper fixing unit could push down the height adjusting support plate of the fixing inlet guide if you force open the upper fixing unit when servicing the fixing/feeding unit, possibly lowering the position of the fixing inlet guide and, ultimately, causing jams.
To prevent such a problem, take extra care whenever opening the upper fixing unit.

7. Installing the Fixing Heater

Install the fixing heater by reversing the steps used to remove it with the following in mind:

a. Do not touch the surface of the heater.
b. Install both heaters so that the side with the longer wire is toward the front.
c. Install the main heater (800W) on the right and the sub heater (400 W) on the left when viewing them from the front; however, install the main heater only to a 220/240V model, which does not have a sub heater.
d. Connect the fastons of the heater wires at the rear so that the one on the right is to the main heater and the one at the top is to the sub heater while viewing them from the rear.

8. Removing the Upper Fixing Roller

1) Slide out the fixing/feeding unit from the copier.
2) Remove the fixing/feeding front cover.
3) Open the fixing delivery assembly.
4) Remove the flywheel.
5) After removing the upper fixing cover, remove the fixing cleaning belt; then, clean the silicone oil pan, and remove the upper fixing unit.
6) Remove the main heater and the sub heater.
7) Remove the two mounting screws used to hold the fixing cleaning assembly ① in place, and release the cleaning belt.

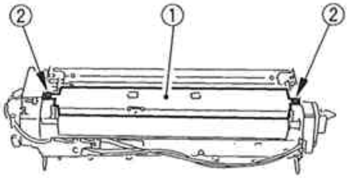


Figure 6-216

8) Remove the two mounting screws, and remove the heater holder ④ from the rear.

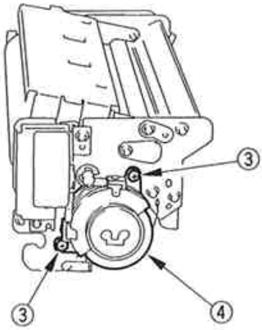


Figure 6-217

9) Remove the two stoppers ⑤ (front, rear).

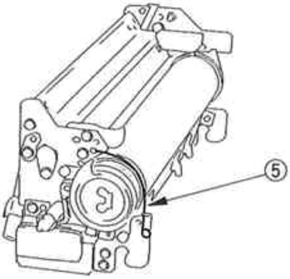


Figure 6-218 (rear)

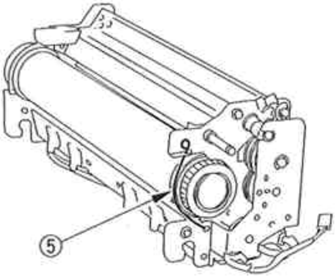


Figure 6-218a (front)

10) Remove the upper roller unit ⑥ while being careful of the thermistor and the thermal switch.

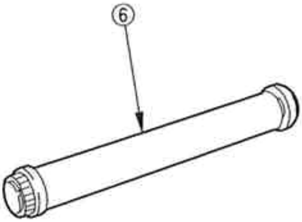


Figure 6-219

11) Remove the C-ring ⑦ at the front, and remove the gear ⑧.
12) Remove the C-ring ⑨ at the rear, and remove the gear ⑩.
13) Slide out the bearing ⑪ and the bushing ⑫ at the rear toward the front.
14) Slide out the bearing ⑬ and the bushing ⑭ at the front of the upper roller toward the front.

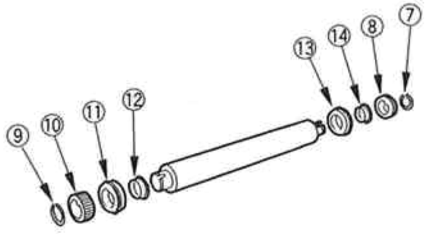


Figure 6-220

9. Installing the Upper Fixing Roller

Install the upper roller by reversing the steps used to remove it.

- Handling the Upper Roller

To protect the surface of the roller from dirt and scratches, wrap it in copy paper or the like.

- Installing the Upper Roller

a. Install it so that the side whose section A shown in Figure 6-221 (notch) is longer is toward the rear.

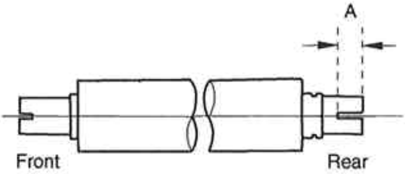


Figure 6-221

b. Install the collars of the bushings ① ② starting at the rear toward the front in the same orientation.

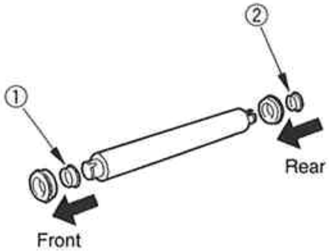


Figure 6-221a

10. Removing the Thermal Switch

1) Slide out the fixing/feeding unit from the copier.
2) Remove the fixing/feeding front cover.
3) Remove the flywheel.
4) Remove the fixing upper cover and the stay cover.
5) Remove the fixing cleaning belt. Remove the mounting screw ①, and remove the oil pan ②.
6) Remove the mounting screw ③ and the faston ④, and remove the thermal switch assembly holder ⑤.
7) Remove the four mounting screws ⑥, and remove the thermal switch assembly.

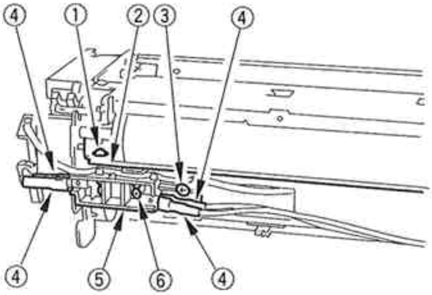


Figure 6-222

8) Remove the two mounting screws, and remove the thermal switch.

11. Removing the Main Thermistor (TH1)

1) Remove the fixing/feeding unit from the copier.
2) Remove the fixing/feeding front cover.
3) Remove the fixing upper cover.
4) Remove the cleaning belt.
5) Remove the mounting screw ①, and remove the oil pan ②.

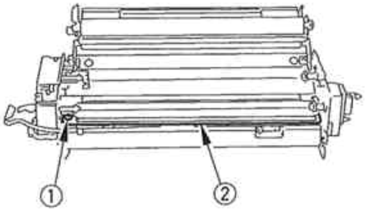


Figure 6-223

6) Remove the mounting screw ③, and shift the thermistor assembly ④ to the right to remove.

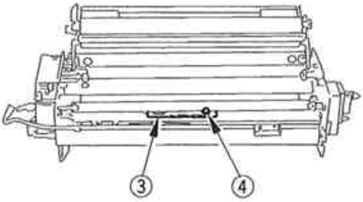


Figure 6-224

7) Remove the mounting screw ⑤ and two retaining springs ⑥, and remove the thermistor ⑦.

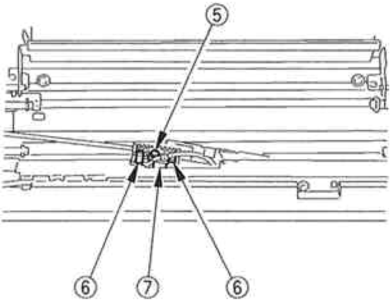


Figure 6-225

12. Removing the Lower Separation Claw Assembly

1) Slide out the fixing/feeding unit from the copier.
2) Remove the fixing/feeding front cover.
3) Remove the flywheel.
4) Remove the upper fixing cover.
5) Remove the fixing cleaning belt, and clean the silicone oil pan; then, remove the upper fixing unit.

6) Remove the two mounting screws ①, and remove the lower separation claw assembly ② together with the support plate.

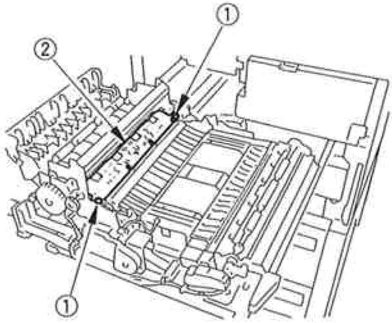


Figure 6-226

7) Remove the tension spring, and remove the lower separation claw assembly.

13. Removing the Lower Roller

1) Slide out the fixing/feeding unit from the copier.
2) Remove the fixing/feeding front cover.
3) Remove the flywheel.
4) Remove the fixing cleaning belt and fixing upper cover; then, clean the silicone oil pan.
5) Remove the upper roller assembly of the fixing assembly.
6) Remove the lower separation claw support plate.
7) Remove the lower roller ① from the fixing assembly, and remove the two E-rings ② from the lower roller; then, remove the two bearings ③.

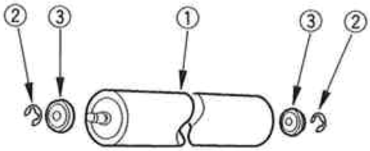


Figure 6-227

14. Removing the Upper Separation Claw

1) Slide out the fixing/feeding unit from the copier.
2) Open the fixing delivery assembly, and release the spring ①; then, remove the upper separation claw ②.

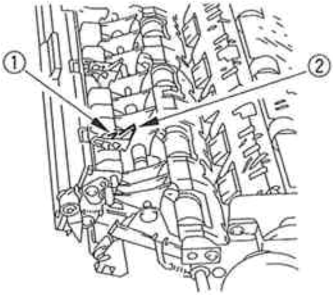


Figure 6-228

15. Adjusting the Nip (tightening the pressure adjusting nut)

The nip width is correct if it is as indicated in Table 6-201. Otherwise, turn the pressure adjusting nut.

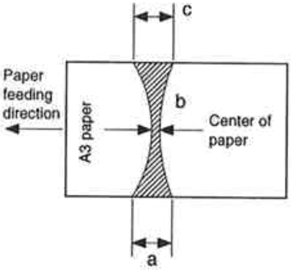


Figure 6-229

Note:
a and c are points 10 mm from either end of the copy paper.

Dimensions	Measured when the upper and lower rollers are sufficiently heated.
b	7.3 ± 0.5 mm
I a – c I	0.5 mm or less

Table 6-201

a. Measuring the Nip

Wait 15 min after the end of the copier's warm-up, and make 20 copies before measuring the nip.

1) Place A3 copy paper, and select A3.
2) Open the copyboard cover.
3) Start service mode (*4*); using the >> key, select nip measurement mode 'NIP'.
4) Press the * user mode key.

   The above will cause the copier to pick up paper and become ready for measurement as in Figure 6-229.

Reference:

The paper will stop once between the fixing rollers; then, it is discharged automatically in about 10 sec.

5) Measure the nip.

16. Adjusting the Fixing Clutch

Adjust the fixing clutch by turning the set screw ③ so that the gap between the 41T gear ① and the control ring ② is 0.1 to 0.3 mm whenever you have replaced any of the following component parts:

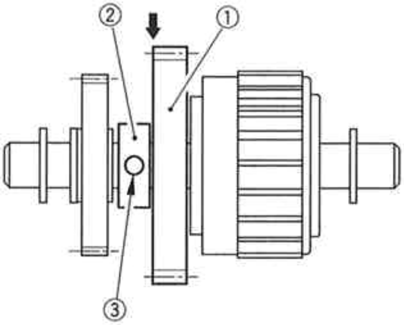


Figure 6-230

17. Removing the Sub Thermistor (TH2) Unit

1) Slide out the fixing/feeding unit.
2) Remove the screw ②, and remove the fixing assembly upper cover ①; then, remove the screw ④, and remove the harness cover ③.

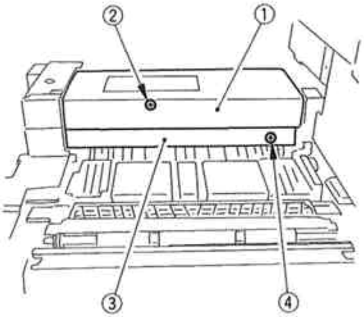


Figure 6-231

3) Remove the screw ⑥, and remove the thermistor (TH2) unit ⑤.

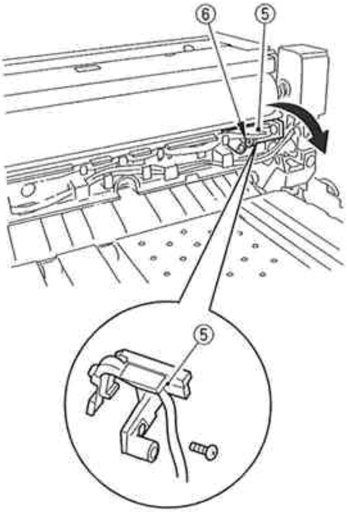


Figure 6-232

Note:
It is difficult to replace the sub thermistor on its own in the field. Be sure to replace it on a unit basis (thermistor unit ⑤ in Figure 6-232.)

B. Delivery Assembly

1. Construction

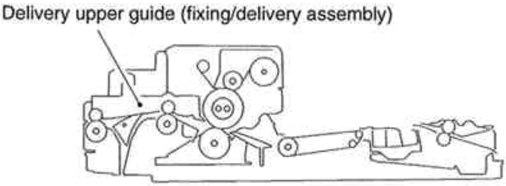

Delivery upper guide (fixing/delivery assembly)

Figure 6-233

2. Removing the Delivery Upper Guide (fixing delivery assembly)

1) Open the front cover, and slide out the fixing/feeding unit to the front and then out of the copier.
2) Remove the fixing/feeding front cover.
3) Remove the mounting screw ①; then, pull out the pin ②, and remove the delivery upper guide ③.

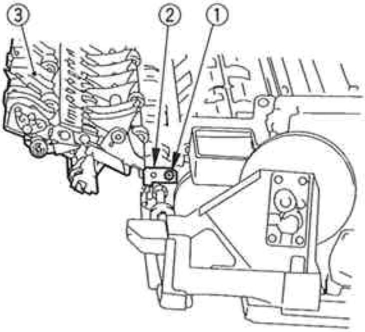


Figure 6-234

3. Removing the Fixing/Feeding Locking Assembly

1) Slide out the fixing/feeding unit to the front and out of the copier.
2) Remove the two mounting screws ① and the E-ring ②; then, disconnect the connector ③, and remove the fixing/feeding locking assembly ④.

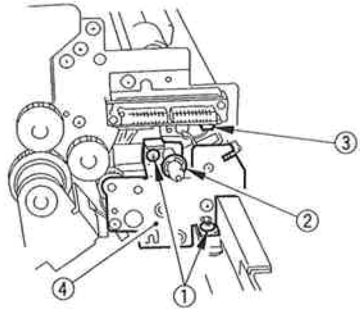


Figure 6-235

4. Removing the External Delivery Roller

1) Slide the fixing/feeding unit to the front and out of the copier.
2) Remove the fixing/feeding front cover.
3) Remove the two mounting screws ①, and remove the delivery roller guide ②.

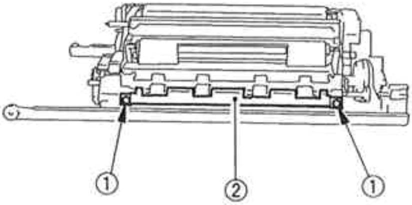


Figure 6-236

4) Remove the fixing/feeding locking assembly.
5) Remove the two E-rings ③, gear ④, torque limiter ⑤, and bushing ⑥ at the front.
6) Remove the E-ring ⑦ and the bushing ⑧ at the rear; then, remove the external delivery roller ⑨.

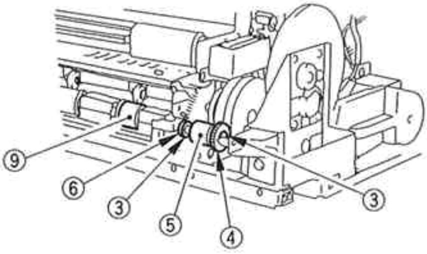


Figure 6-237 (front)

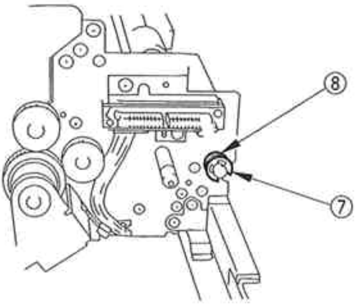


Figure 6-237a (rear)

5. Removing the External Delivery Sensor and the Internal Delivery Sensor

1) Remove the external delivery roller.
2) Remove the two mounting screws ①, external delivery sensor assembly, and internal delivery sensor assembly ②.

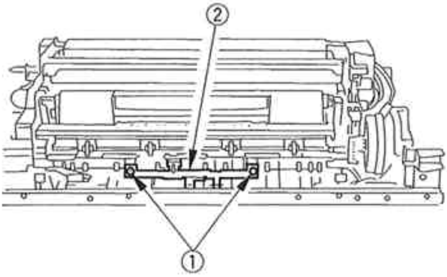


Figure 6-238

6. Removing the Fixing Assembly Outlet Paper Sensor Assembly

1) Slide out the fixing/feeding unit to the front, and remove the front cover and the upper fixing unit. (See p. 6-20.)
2) Remove the lower fixing separation claw assembly. (See p. 6-28.)
3) Remove the mounting screw ①, and remove the fixing assembly outlet paper sensor assembly ② to the right; then, disconnect the connector ③ (J108), and remove the sensor.

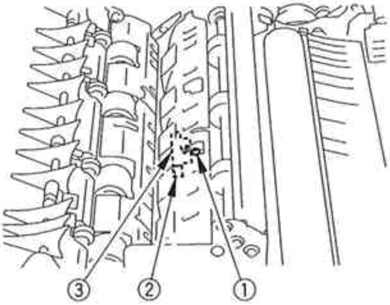


Figure 6-239

7. Removing the Internal Delivery Roller

1) Open the front door, and slide out the fixing/feeding unit to the front and out of the copier.
2) Remove the fixing/feeding front cover.
3) Remove the fixing upper unit. (See p. 6-20.)
4) Remove the fixing lower separation claw assembly. (See p. 6-28.)
5) Remove the E-ring ①, gear ②, and parallel pin ③ at the front.
6) Remove the E-ring ④ and bushing ⑤.

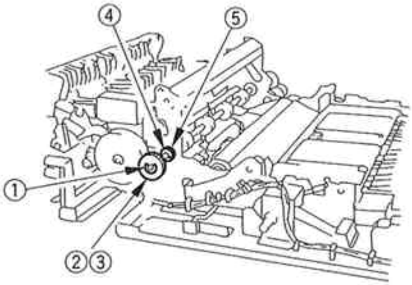


Figure 6-240

7) Remove the E-ring ⑥ and the gear at the rear.
8) Remove the E-ring ⑧ and the bushing ⑨.

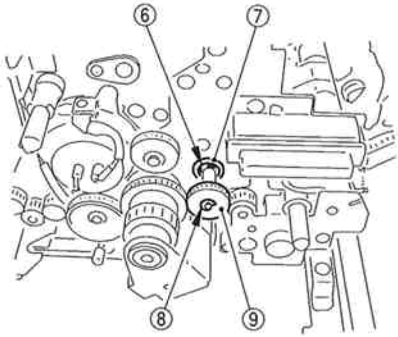


Figure 6-241

9) Remove the fixing assembly outlet paper sensor assembly. (See p. 6-36.)
10) Remove the internal delivery roller.

CHAPTER 7

EXTERNALS/AUXILIARY MECHANISMS

This chapter shows the copier's external parts, and explains the principles used for the copier's various control mechanisms in view of the functions of electrical and mechanical units and in relation to their timing of operation. It also shows how these units may be disassembled/assembled and adjusted.

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I. CONTROL PANEL

A. Outline

The copier's control panel consists of the control panel controller PCB, 320 × 240-dot liquid crystal display panel unit, transparent touch switch panel, and key switch panel, and it provides the following functions:

① Data communication
② LCD processing
③ LCD contrast automatic adjustment and manual adjustment
④ Touch switch input
⑤ Key switch input

B. Operation

1. Data Communication

The control panel controller PCB exchanges data with the copier's image processor PCB through an interface unit in serial.

The microprocessor on the control panel controller PCB serves to control such data communications.

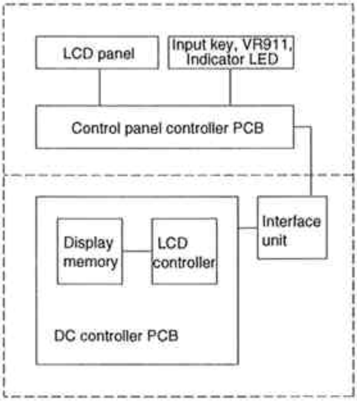

LCD panel
Input key, VR911, Indicator LED
Control panel controller PCB
Interface unit
Display memory
LCD controller
DC controller PCB

Figure 7-101

2. LCD Processing

The microprocessor on the DC controller PCB sends commands to the LCD controller as necessary; in response, the LCD controller interprets these commands and executes them. The LCD controller serves to turn ON/OFF the indicators according to the appropriate instructions.

The LCD controller, in addition, is used to write display character codes in sequence to RAM for display memory; the RAM data for display memory is sent for display to the display panel at such times as instructed by the LCD controller.

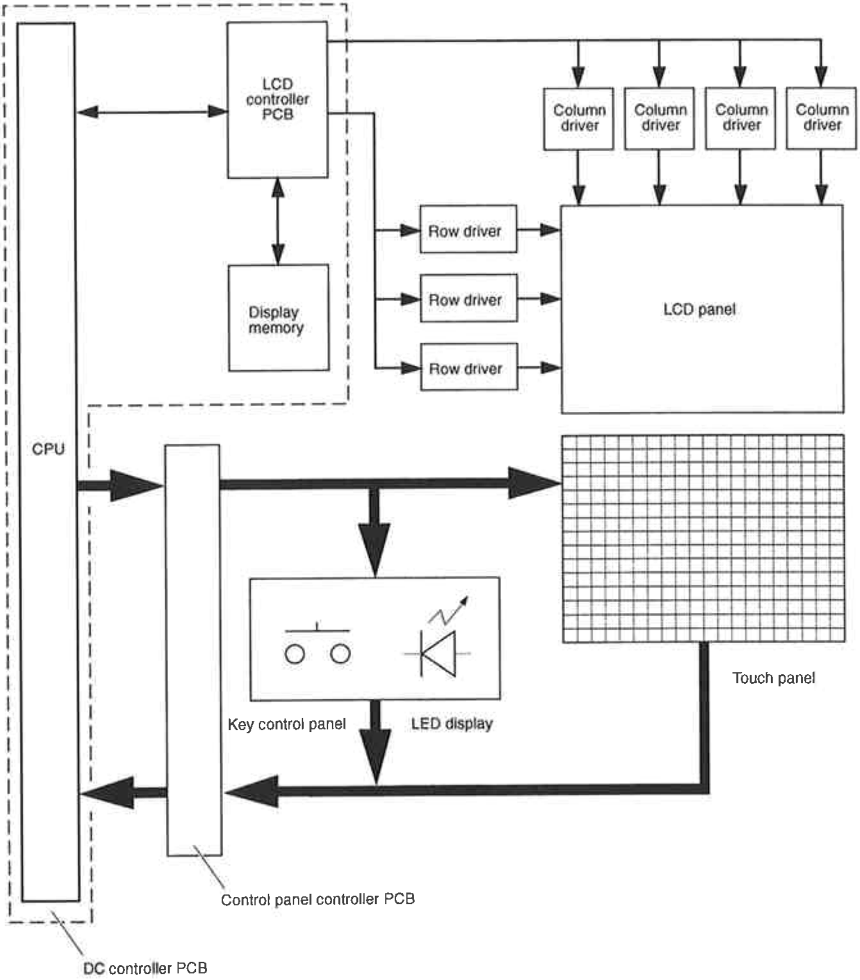

LCD controller PCB
Column driver
Column driver
Column driver
Column driver
Row driver
Row driver
Row driver
LCD panel
Display memory
CPU
Touch panel
Key control panel
LED display
Control panel controller PCB
DC controller PCB

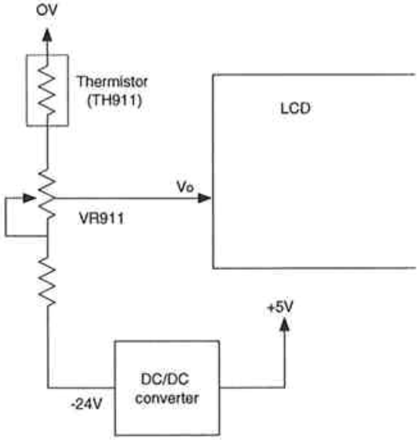
Figure 7-102

3. LCD Contrast Automatic Adjustment

The control panel controller PCB is equipped with a function that adjusts the changes in the contrast caused by changes in temperature.

The control panel controller PCB is equipped with a thermistor (TH911) to monitor the temperature inside the control panel. The voltage supplied to the LCD is varied according to the changes in resistance of the temperature to ensure optimum contrast on the LCD.

The LCD contrast set by the contrast volume (VR911) on the control panel remains unaffected by the ambient temperature.



Vo: Supply voltage to the LCD.

Figure 7-103

If the temperature around the control panel increases, the resistance of the thermistor decreases, thereby increasing the supply voltage (VO) to the LCD.

When the temperature near the control panel decreases, the resistance of the thermistor increases, thereby decreasing the supply voltage (VO) to the LCD.

4. Touch Switch Input

The keys of the touch switch panel and the control panel controller PCB are connected as shown in Figure 7-102. The touch switch panel consists of bonded glass and film sheets between which pacers are provided; it has keys in a pattern of 15 columns and 20 rows.

When the film surface is pressed by a finger, the contact between the film and the glass causes electrical continuity.

This way, a pair of electrodes is connected, allowing detection of X/Y coordinates as in the case of a common key matrix. In other words, the control panel controller PCB detects which key has been pressed based on the correspondence between the key scan signal from the control panel controller PCB and the input signal to the control panel controller circuit.

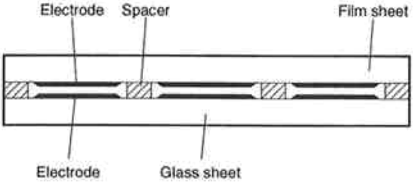


Figure 7-104

II. FANS

The copier is equipped with six fans, serving to exhaust ozone, collect stray toner, and cool the parts. Table 7-201 shows the function of each fan together with its filter and fan orientation.

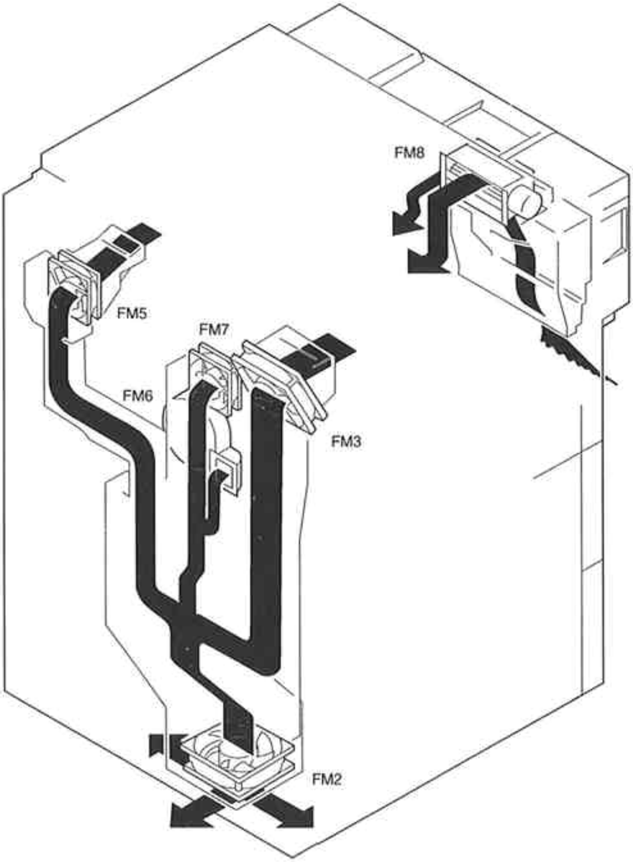


Figure 7-201

Notation	Name	Orientation	Filter	Function
FM2	Air exhaust fan	Blowing	Ozone	Exhausts air from each fan to the outside.
FM3	Fixing heat exhaust fan	Drawing		Prevents overheating inside the machine by the fixing heater. Exhausts silicone oil vapors.
FM5	Developing fan	Drawing		Draws in stray toner from around the developing assembly.
FM6	Feeding fan	Drawing		Draws copy paper to the feeding belt.
FM7	Cleaner fan	Drawing		Prevents internal overheating.
FM8	Scanner cooling fan	Blowing	Air, dust-proofing	Cools the scanner and the primary charging assembly.

Table 7-201

The following fans are controlled to either full-speed mode or half-speed mode. The circuits are switched as in Figure 7-202 between +24V and +12 V by the CPU on the DC controller PCB.

- Air exhaust fan (FM2)
- Feeding fan (FM6)
- Cleaner fan (FM7)
- Scanner cooling fan (FM8)

When the CPU causes the FMFLL signal to go ‘1’, +24 V is supplied to initiate full-speed rotation; when the FMHLF signal goes ‘1’, +12 V is supplied to initiate half-speed rotation.

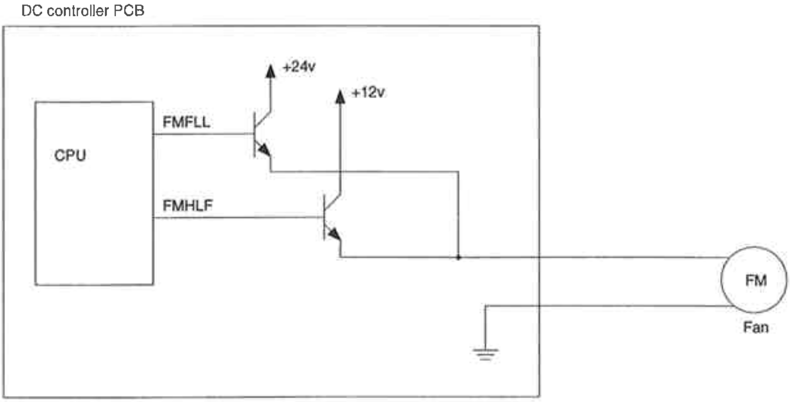


Figure 7-202

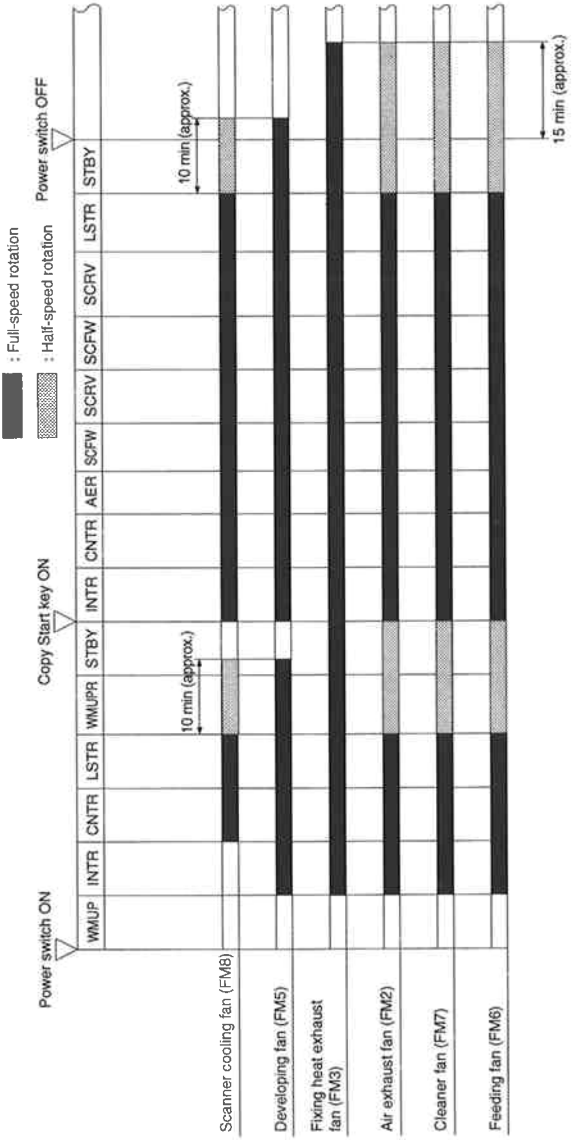

: Full-speed rotation
: Half-speed rotation
Power switch ON
Copy Start key ON
Power switch OFF
WMUP
INTR
CNTR
LSTR
WMUPR
STBY
INTR
CNTR
AER
SCFW
SCRV
SCFW
SCRV
LSTR
STBY
10 min (approx.)
10 min (approx.)
15 min (approx.)
Scanner cooling fan (FM8)
Developing fan (FM5)
Fixing heat exhaust fan (FM3)
Air exhaust fan (FM2)
Cleaner fan (FM7)
Feeding fan (FM6)

Figure 7-203 Fan Operation Sequence

III. POWER SUPPLY

A. Outline of Power Supply

Figure 7-301 is a block diagram showing the distribution of power inside the copier.

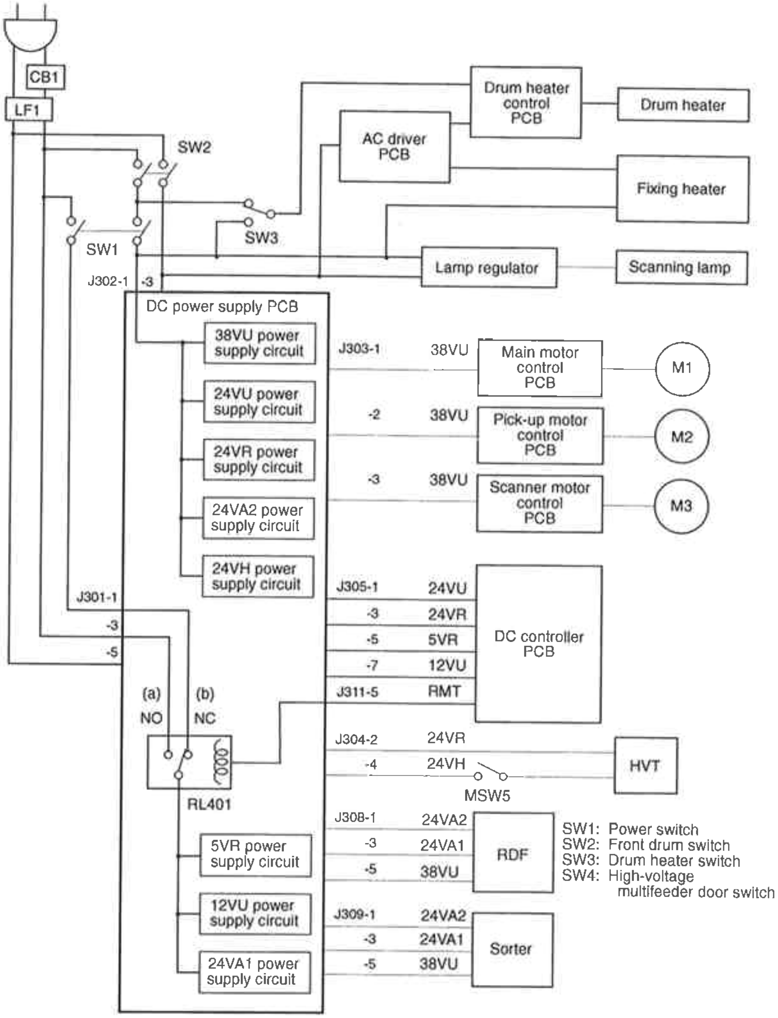

CB1
LF1
SW2
SW1
SW3
J302-1
-3
AC driver PCB
Drum heater control PCB
Drum heater
Fixing heater
Lamp regulator
Scanning lamp
DC power supply PCB
38VU power supply circuit
24VU power supply circuit
24VR power supply circuit
24VA2 power supply circuit
24VH power supply circuit
J303-1
38VU
-2
38VU
-3
38VU
Main motor control PCB
Pick-up motor control PCB
Scanner motor control PCB
M1
M2
M3
J301-1
-3
-5
(a) NO
(b) NC
RL401
J305-1
24VU
-3
24VR
-5
5VR
-7
12VU
J311-5
RMT
DC controller PCB
J304-2
24VR
-4
24VH
MSW5
HVT
5VR power supply circuit
12VU power supply circuit
24VA1 power supply circuit
J308-1
24VA2
-3
24VA1
-5
38VU
RDF
J309-1
24VA2
-3
24VA1
-5
38VU
Sorter
SW1: Power switch
SW2: Front drum switch
SW3: Drum heater switch
SW4: High-voltage multifeeder door switch

Figure 7-301

B. Power Supply Circuit

The copier's DC power supply provides eight DC outputs: 38 VU, 24 VU, 24 VR, 24 VA2, 24 VH, 24 VA1, 12 VU, and 5 VR.

Its AC power supply consists of the following: a. AC direct input line without a switch; b. input line through a power switch (SW1); and c. input line through both power switch (SW1) and door switch (SW2).

When the power switch (SW1) is turned ON, each power supply circuit is supplied with AC power for DC outputs; the input lines are switched for the 5 VR, 12VU, and 24VA1 power supply circuits by the remote signal (RMT) from the DC controller PCB.

When the power switch (SW1) is turned ON, power is supplied to each power supply circuit through the line that goes through the power switch (SW1; b) to activate the microprocessor on the DC controller PCB. Then, the microprocessor on the DC controller PCB causes the remote signal (RMT) to go '1' to turn ON the relay (RL401), switching the AC input line to the AC direct input line (a).

When the power is turned OFF, the 38VU, 24VU, 24VR, 12VA2, and 24VH circuits turn OFF; however, other DC power supply circuits remain ON to continue to provide the DC controller PCB with DC power, thereby rotating the fans for a specific period of time (about 15 min).

Thereafter, the DC controller PCB causes the remote signal (RMT) to go '0' to cut off the AC circuit, thereby automatically cutting off the AC input to the DC power supply PCB.

Caution:
You must disconnect the power plug before working on the DC controller PCB (for replacement, for example).

Reference:

The tolerances for DC voltage are as follows:

- +38VU +10%, –7%
- +24VU +10%, –7%
- +24VU ±2%
- +24VA2 +10%, –7%
- +24VH +10%, –7%
- +5VR ±4%
- +12VU +10%, –7%
- +24VU +10%, –20%

The above, however, assumes that the AC input accuracy is ±10%.

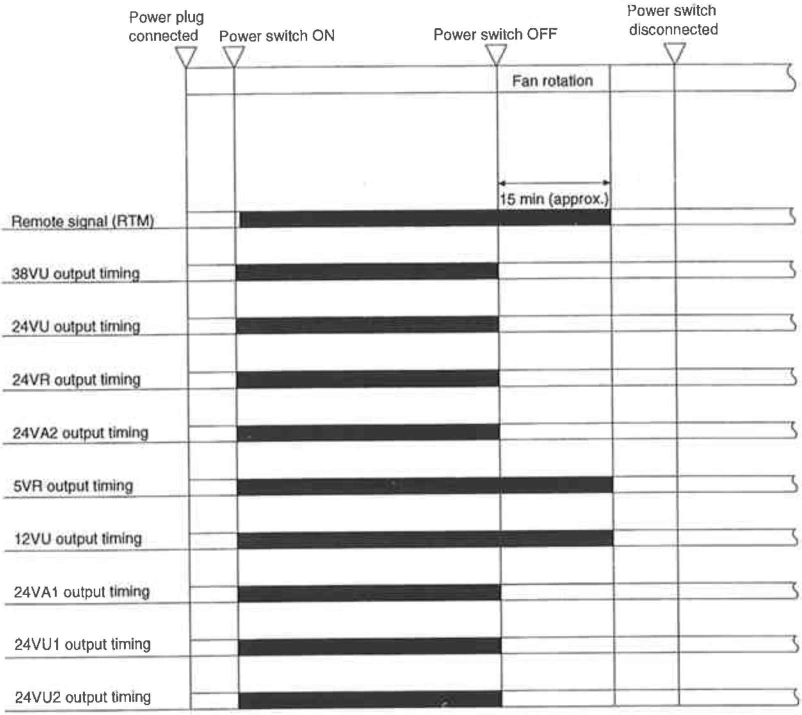

Power plug connected
Power switch ON
Power switch OFF
Power switch disconnected
Fan rotation
15 min (approx.)
Remote signal (RTM)
38VU output timing
24VU output timing
24VR output timing
24VA2 output timing
5VR output timing
12VU output timing
24VA1 output timing
24VU1 output timing
24VU2 output timing

Figure 7-302

As a means of protection for the power supply PCB, the AC power supply input side is equipped with a fuse and each DC circuit is equipped with a built-in overcurrent protection circuit.

If an overcurrent flows because of a short circuit in the power supply line, the protection circuit will turn on to turn OFF the output of the power supply unit. If such happens, disconnect the power plug, and remove the cause of activation; then, turn ON the power supply. The protection circuit may be reset by turning ON the AC power supply once again after keeping the AC power supply of the power supply unit OFF for about 30 sec.

Caution:
If an overcurrent flows, the protection circuit turns on before the fuse of the AC input blows; however, the AC input fuse may blow if the AC power supply is turned ON/OFF while the output of the power supply unit has a short circuit.

C. Power Supply for Date/Time Display

The DC controller PCB is equipped with a lithium battery as a backup to be used in the event that the power plug is disconnected by accident.

The lithium battery is good for about five years with the power plug disconnected. When its life is exhausted, the date/time notation remains unchanged; the notation mechanism starts to operate once again when the power plug is connected.

You cannot use the lithium battery once it reaches its life, i.e., you cannot recharge it. (Replace it with a service part battery.)

The service part battery will not discharge unless it is connected to a circuit, and it is good as long as five years after it is first used.

Keep in mind that the backup data will be lost when the battery reaches its life or when it is taken out for replacement; be sure to re-enter data as necessary.

Caution:
Replace the lithium battery only with the one listed in the Parts Catalog.
Use of another battery may present a risk of fire or explosion.
The battery may present a fire or chemical burn hazard if mistreated.
Do not recharge, disassemble or dispose of it in fire. Keep the battery out of reach of children and discard any used battery promptly.

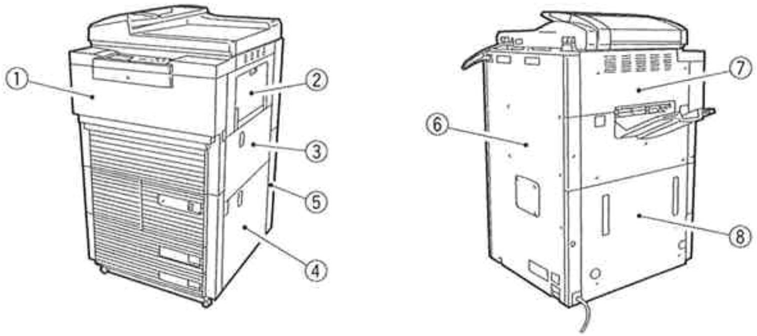
IV. DISASSEMBLY AND ASSEMBLY

This section explains mechanical characteristics and describes how to disassemble/assemble the machine.

Be sure to observe the following whenever disassembling/assembling the machine:

1. ⚠ Disconnect the power plug before starting the work.
2. Unless otherwise shown, assemble the parts by reversing the steps given to disassemble them.
3. Identify each screw by type (length, diameter) and location.
4. A washer is used for one of the mounting screws on the rear cover to protect against static electricity; be sure to use the washer when assembling the part.
5. A washer is used for some mounting screws (for grounding wire, varistor) to ensure correct electrical continuity; be sure to use the washer when assembling the part.
6. As a rule, do not operate the machine while any of its parts is removed.
7. When sliding out the duplexing unit or the fixing assembly, be sure to turn off the front door switch or the power switch.

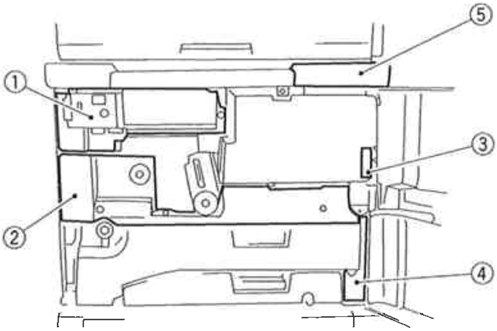
A. External Covers



① Front door
② Multifeeder door
③ Upper right door (4)
④ Lower right door (2)

⑤ Lower right cover (1)
⑥ Rear cover (4)
⑦ Upper left cover (5)
⑧ Lower left cover (7)

Figure 7-401



① Upper inside cover (2)	④ Power switch assembly cover (3)
② Fixing/feeding assembly front cover (3)	⑤ Hopper cover
③ Connector cover (1)	

Figure 7-402

Remove the covers as necessary to clean, inspect, or repair the inside of the machine.

Those covers that may be removed through mere removal of mounting screws on their own are omitted from the discussions.

1. Removing the Front Door

1) Open the front door, and remove the mounting screw ② of the stopper tape ①; then, remove the two stoppers ③.

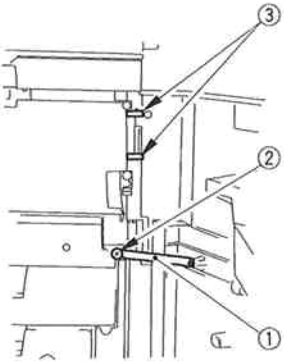


Figure 7-403

2) Pull out the pin ④ in downward direction.

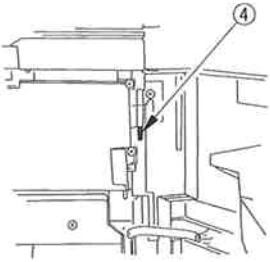


Figure 7-404

3) Hold the front door ⑤, and pull it out in upward direction at an angle.

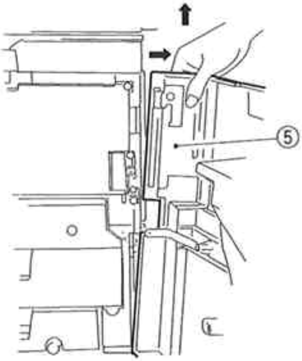


Figure 7-405

2. Removing the Inside Upper Cover

1) Remove the front door, and shift the fixing/feeding lever; then, slide out the fixing/feeding unit.
2) Remove the three mounting screws ①, and remove the inside upper cover ②.

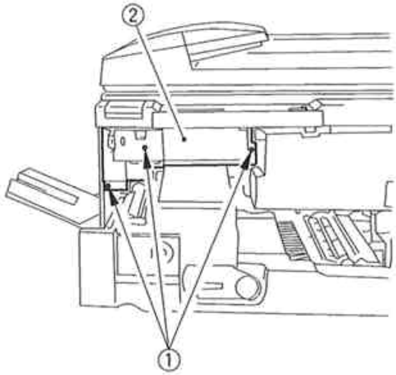


Figure 7-406

3. Removing the Fixing/Feeding Unit Front Cover

1) Open the front door, and slide out the fixing/feeding unit.
2) Remove the screw ① of the releasing lever; then, while pushing the rear (inside of the fixing/feeding assembly) of the releasing lever locking shaft, shift the releasing lever ② to remove.
3) Remove the mounting screw ③, and remove the fixing knob ④.
4) Remove the three mounting screws ⑤, and remove the fixing/feeding assembly front cover ⑥.

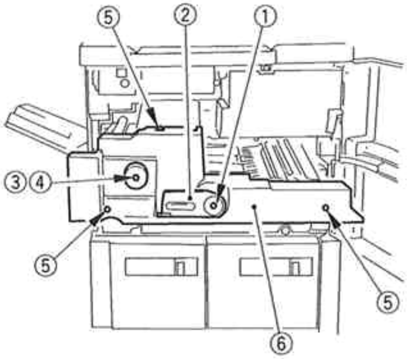


Figure 7-407

4. Removing the Rear Cover

1) Remove the nine screws ①, and remove the rear cover ②.

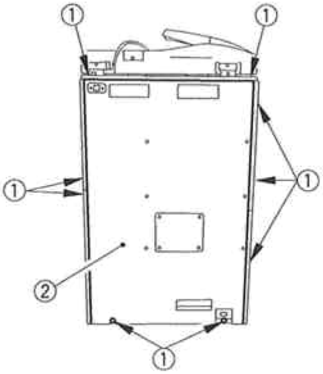


Figure 7-408

5. Sliding Out the Hopper Assembly

1) Open the front door, and open the hopper cover ①. Remove the three mounting screws ② and the connector cover ③, and disconnect the connector; then, slide the hopper ④ to the front, and turn it.

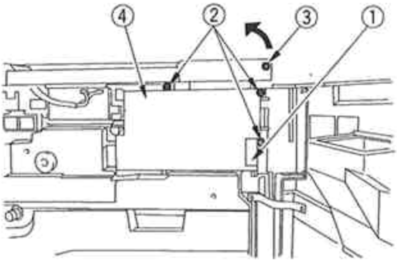


Figure 7-409

Caution:
When installing the hopper assembly, be sure to check that the connector is connected.

6. Removing the Process Unit

1) Open the front door.
2) Remove the developing assembly. (See p. 4-55.)
3) Remove the hopper assembly. (See p. 4-60.)
4) Slide out the fixing feeding assembly, and place the drum protection sheet on the registration roller assembly.
5) Disconnect the four connectors ①, and remove the two mounting screws ②.

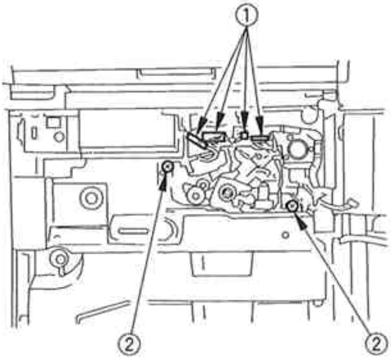


Figure 7-410

6) Insert the drum rotating tool ③ into the slit ④ in the drum shaft. While keeping the drum in place so that it will not rotate in counterclockwise direction, insert a screwdriver through the center hole ⑤ of the drum rotating tool; then, remove the drum fixing screw.

Caution:
Do not remove the drum fixing screw before fixing the drum in place. If the drum is allowed to rotate in counterclockwise direction, the cleaning blade will not come into contact with the drum correctly, leading to cleaning faults.

Reference:
If you are releasing the hopper assembly but not removing it, be sure to open the multifeeder door and the upper right door to allow for space for the front door.

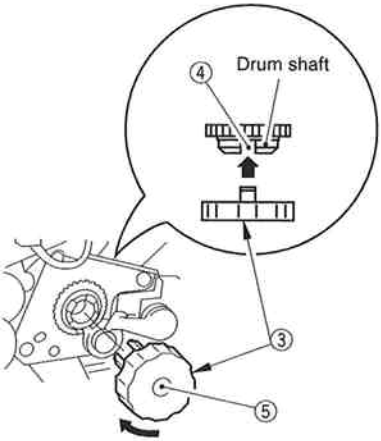


Figure 7-411

7) Slide out the process unit ⑥ until it stops.

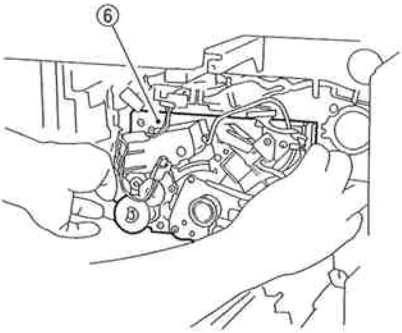


Figure 7-412

8) Hold the grip of the process unit as shown Figure 7-413, and remove it.

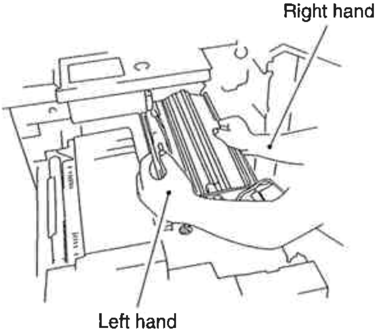


Figure 7-413

7. Installing the Process Unit

Install the process unit by reversing the steps used to remove it while keeping the following in mind:

1) Place the process unit while aligning it along the front and rear guide plates ① of the left rail.
For the right rail, be sure to place the process unit on the L-shaped stay.

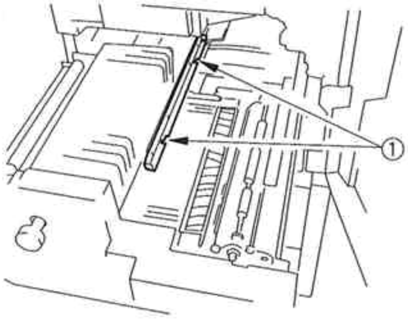


Figure 7-414 (rail side)

2) After inserting the process unit into the copier, match the slit of the drum shaft and the slit of the drum using the drum rotating tool ③. Then, insert the drum fixing ⑤, and insert the mounting screw ④ into the center hole in the drum rotating tool.

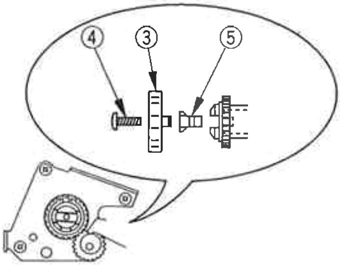


Figure 7-415

B. Control Panel

1. Removing the Control Panel from the Copier

1) Remove the mounting screw from the upper left cover, and remove the two stepped screws (M3x6) from the standard white cover.
2) Open the RDF, and remove the three mounting screws ① and the three RDF catch fixings ②.

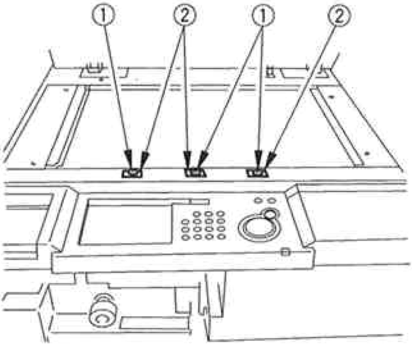


Figure 7-416

3) Remove the three mounting screws ③; then remove the right upper cover ④.

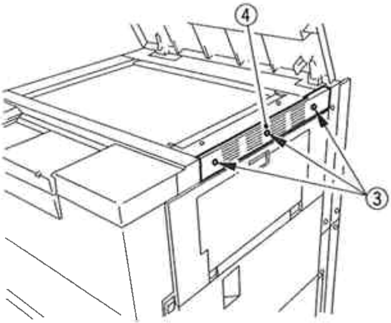


Figure 7-417

4) Remove the mounting screw from the control panel ⑤.

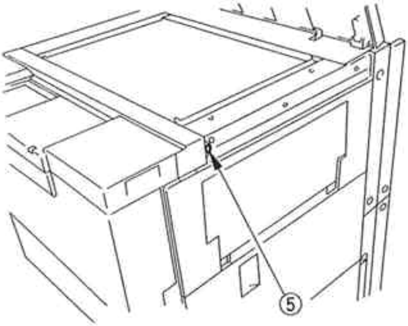


Figure 7-418

5) Open the front door, and remove the three mounting screws ⑥; then, remove the connector cover ⑦, and remove the connector. Open the hopper ⑧.

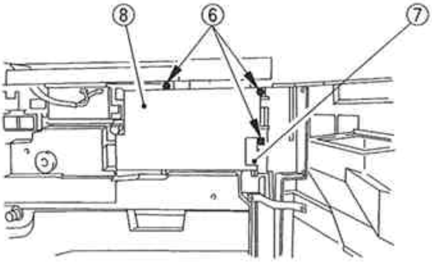


Figure 7-419

Caution:
When installing the hopper assembly, check to make sure that the connector is connected.

6) Shift the fixing feeding assembly releasing lever ⑨ from vertical to horizontal, and slide out the fixing feeding assembly ⑩.

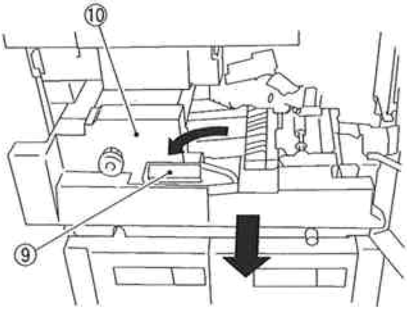


Figure 7-420

7) Remove the three mounting screws ⑪, and remove the inside upper cover ⑫; then, push in the fixing feeding assembly.

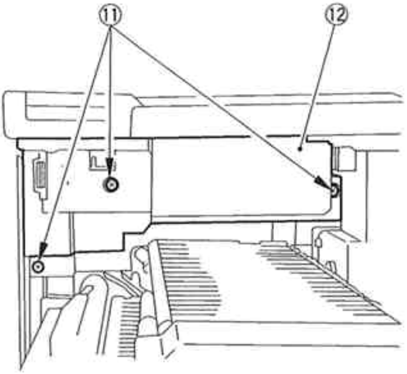


Figure 7-421

8) Remove the three mounting screws ⑬, and remove and turn over the control panel.

Caution:
Take care not to damage the surface of the control panel by the copier's chassis.

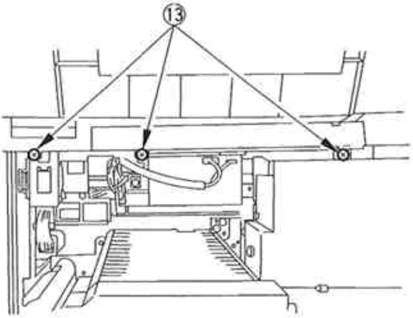


Figure 7-422

9) Disconnect the three connectors (J911, J915, J955).

2. Removing the Control Panel PCB

1) Remove the four mounting screws ①, and slide the rear cover ② to the right to remove.

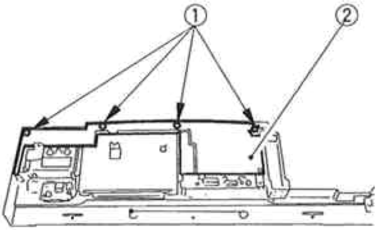


Figure 7-423

3. Removing the Touch Panel

1) Remove the five mounting screws ①, and remove the center support plate ②.

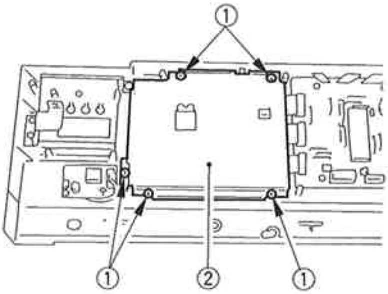


Figure 7-424

2) Remove the three flat cables ③ (J912, J913, J916) of the control panel CPU PCB, and disconnect the connector ④ (J956) of the inverter PCB.
3) Remove the five mounting screws ⑤, and remove the touch panel ⑥.

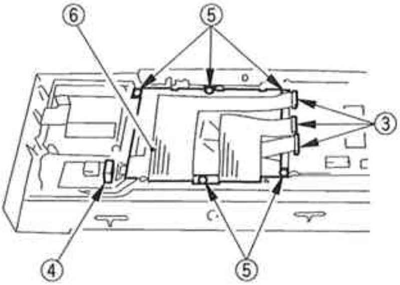


Figure 7-425

4. Removing the Control Panel CPU PCB

1) Remove the five mounting screws ①, and remove the control panel right support plate ② and the control panel CPU PCB ③.

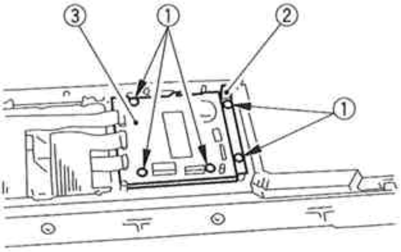


Figure 7-426

2) Remove the thirteen mounting screws ④; then, remove the keypad PCB ⑤.

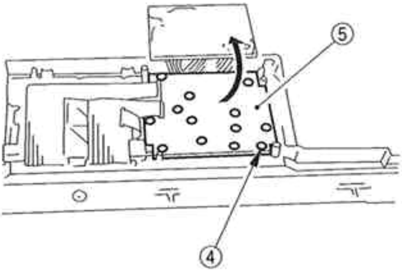


Figure 7-427

C. Door Switch Assembly

1. Removing the Front Door Switch Assembly

1) Open the front door.
2) Remove the inside upper cover.
3) Remove the control panel.
4) Remove the two mounting screws ①, and remove the door switch assembly ②.

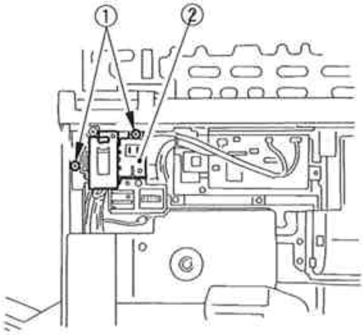


Figure 7-428

2. Removing the Multifeeder Door Switch Assembly

1) Remove the front door, and remove the hopper assembly.
2) Remove the three mounting screws ①, and remove the power supply switch assembly cover ②.

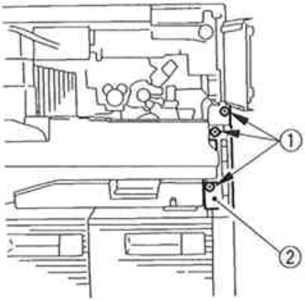


Figure 7-429

3) Remove the three mounting screws ③, and remove the multifeeder door sensor/multifeeder door catch assembly ④.

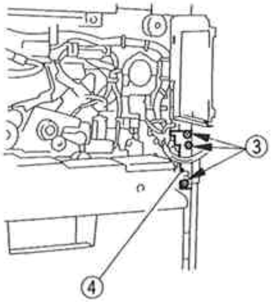


Figure 7-430

4) Remove the sensor from the multifeeder door sensor/multifeeder door catch assembly.

3. Installing the Drum Heater Switch

Install the switch so that its right side is in ON position.

D. Fan Unit

1. Removing the Scanner Cooling Fan

1) Open the front door, and remove the inside upper cover. (See p. 7-15.)
2) Disconnect the three connectors ① (J1, J2, J3) from the potential control PCB, and disconnect also the connector ② (J921) from the service switch PCB.
3) Remove the five mounting screws ③, and disconnect the connector ④; then, remove the scanner cooling fan unit ⑤ together with the potential controller PCB.

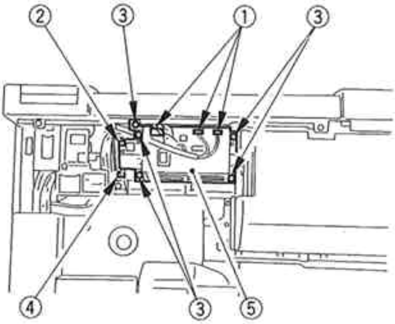


Figure 7-431

2. Removing the Air Exhaust Fan

1) Remove the rear cover.
2) Remove the two mounting screws ①, and disconnect the connector ②; then, remove the air exhaust fan ③.

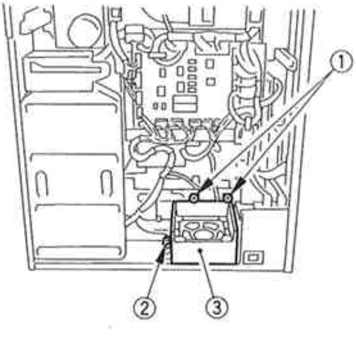


Figure 7-432

3. Removing the Fixing Air Exhaust Fan

1) Remove the rear cover.
2) Remove the three mounting screws ①, and disconnect the connector ②; then, remove the fixing heat exhaust fan ③.

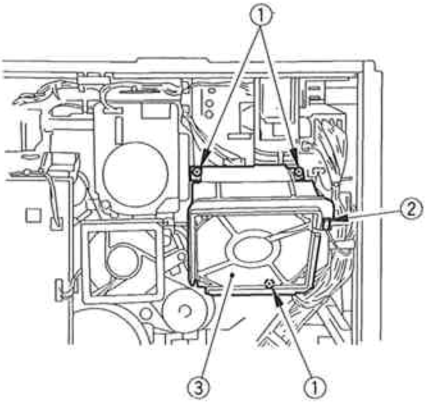


Figure 7-433

4. Removing the Developing Fan

1) Remove the rear cover.
2) Disconnect the connector ① (J301) from the high-voltage transformer PCB, and remove the three mounting scrwes ②; then, shift the high-voltage transformer assembly ③.

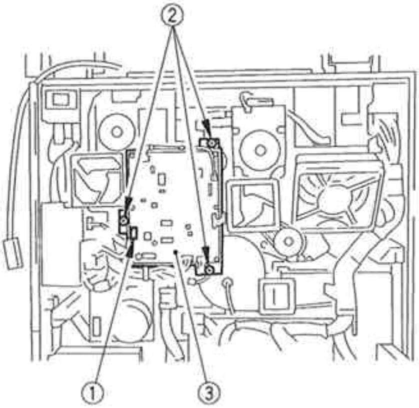


Figure 7-434

3) Remove the two mounting screws ④, and disconnect the connector ⑤; then, remove the developing fan ⑥.

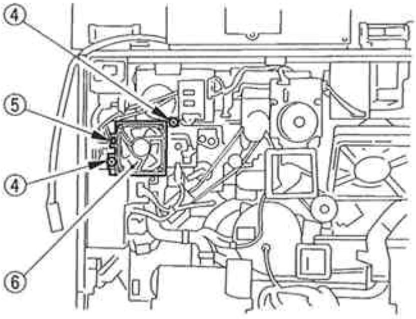


Figure 7-435

5. Removing the Cleaner Fan

1) Remove the rear cover.
2) Remove the three mounting screws, and shift the high-voltage transformer PCB.
3) Remove the two mounting screws ①, and disconnect the connector ②; then, remove the developing fan assembly ③.

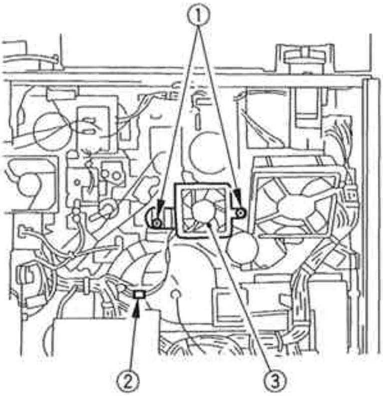


Figure 7-436

6. Removing the Feeding Fan

1) Remove the rear cover.
2) Remove the three mounting screws, and shift the high-voltage transformer PCB.
3) Remove the cleaner fan.
4) Remove the two mounting screws ①, and disconnect the connector ②; then, remove the feeding fan ③.

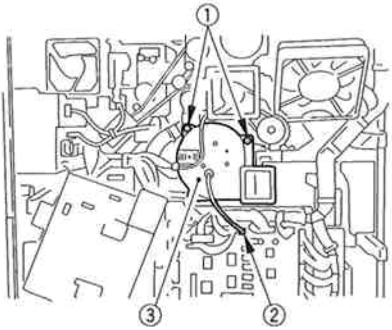


Figure 7-437

E. Removing the Counter Assembly

1) Open the front door, and remove the inside upper cover; then, remove the mounting screw from the control panel.
2) Remove the mounting screw ①, and disconnect the two connectors ②; then, remove the support plate together with the counter assembly.

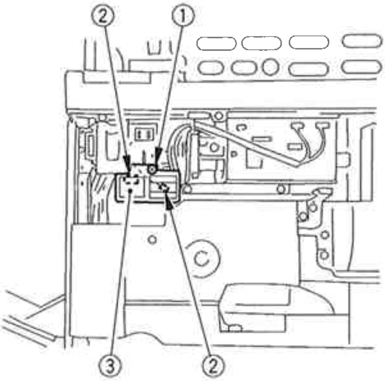


Figure 7-438

F. Main Motor Assembly

1. Removing the Main Motor

1) Remove the rear cover.
2) Remove the high-voltage PCB.
3) Remove the spring ①; loosen the tension pulley, remove the four mounting screws ②, detach the belt at the tip of the main motor, and remove the main motor ③.

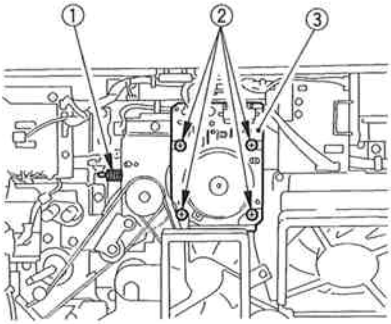


Figure 7-439

G. Fixing/Waste Toner Drive Assembly

1. Construction

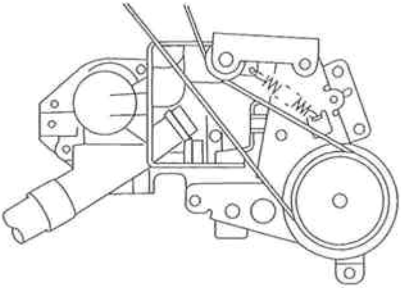


Figure 7-440

2. Removing the Waste Toner Bottle

1) Remove the mounting screw, remove the lower right cover, and slide out the waste toner bottle to the side of the multifeeder.

3. Removing the Fixing/Waste Toner Drive Assembly

1) Open the front door, and slide out the process unit, fixing/feeding unit, and holding tray assembly about 10 cm from the copier.
2) Remove the rear cover.
3) Remove the high-voltage transformer PCB.
4) Remove the cleaner fan and the feeding fan.
5) Remove the waste toner bottle.
6) Remove the spring ①, and loosen the tension pulley ②; then, detach the timing belt ③.

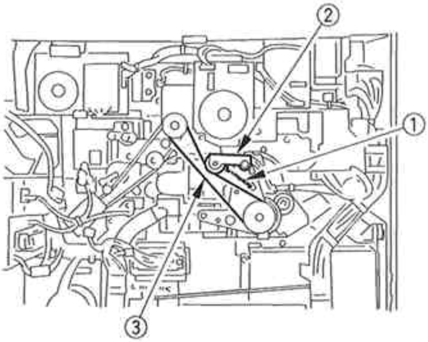


Figure 7-441

7) Remove the three mounting screws ④, and disconnect the holding tray assembly drawer connector ⑤.

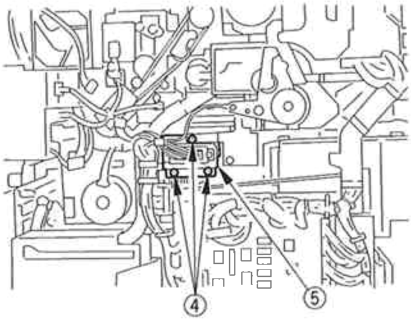


Figure 7-442

8) Remove the mounting screw ⑥ of the DC controller PCB, and disconnect the three connectors ⑦ (J113, J114, J115) and two connectors ⑧.

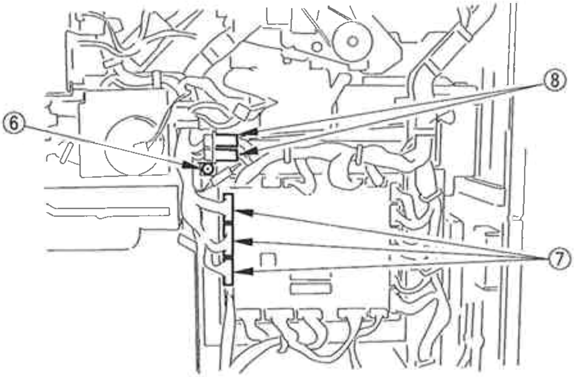


Figure 7-443

9) Remove the four mounting screws ⑨, and remove the fixing/waste toner drive assembly ⑩ together with the waste toner feeding assembly.

Caution:

When removing the fixing/waste toner drive assembly, stop up the tip of the waste toner pipe with a ball of paper or the like to prevent spilling of waste toner.

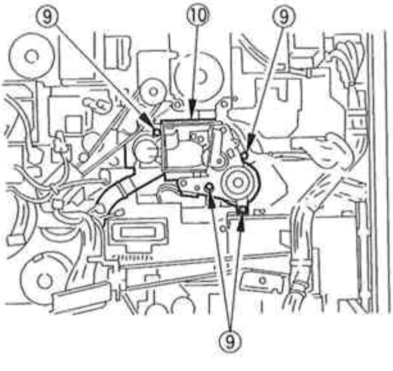


Figure 7-444

H. Drive Assembly (drum/developing assembly)

1. Construction

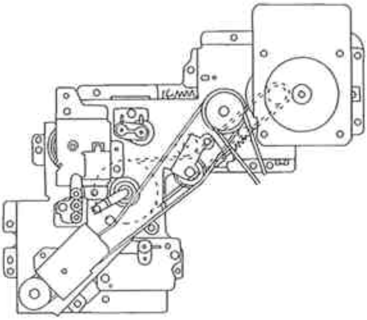


Figure 7-445

2. Removing the Drive Assembly

1) Open the front door, and slide out the process unit, fixing/feeding unit, and holding tray assembly about 10 cm from the copier.
2) Remove the rear cover.
3) Remove the high-voltage transformer PCB and the high-voltage transformer assembly.
4) Remove the waste toner bottle.
5) Remove the cleaner fan, feeding fan, and developing fan.
6) Remove the fixing/waste toner drive assembly.
7) Remove the three mounting screws ① to free the harness guide 1 ②.

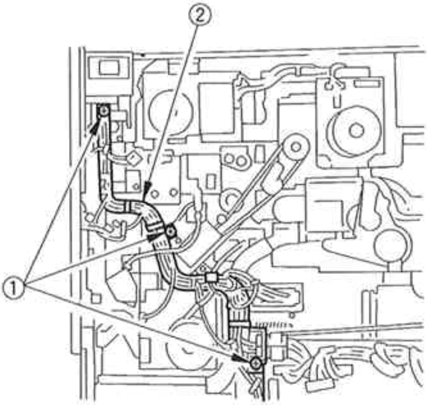


Figure 7-446

8) Remove the seven mounting screws ③, and remove the drive unit ④.

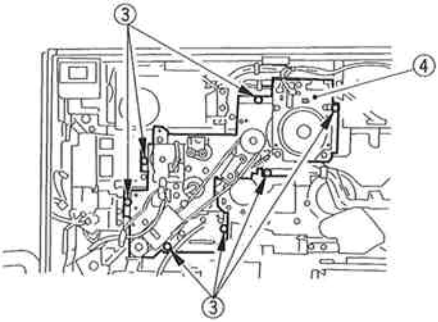


Figure 7-447

I. Vertical Path Drive Assembly

1. Construction

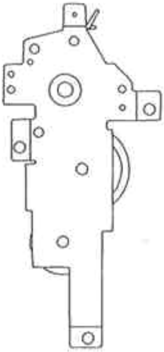


Figure 7-448

2. Removing the Vertical Path Drive Assembly

1) Remove the lower right cover.
2) Remove the rear cover.
3) Remove the waste toner bottle.
4) Remove the five mounting screws ①, and remove the rear right grip assembly ②.

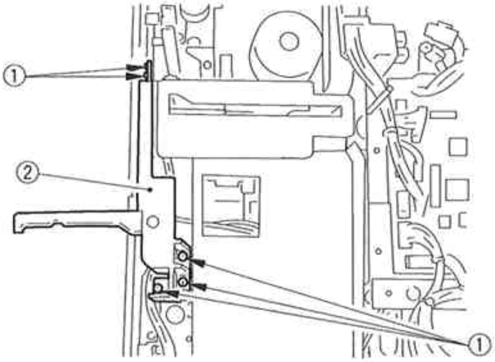


Figure 7-449

5) Remove the three mounting screws ③, and remove the waste toner bottle support plate ④.

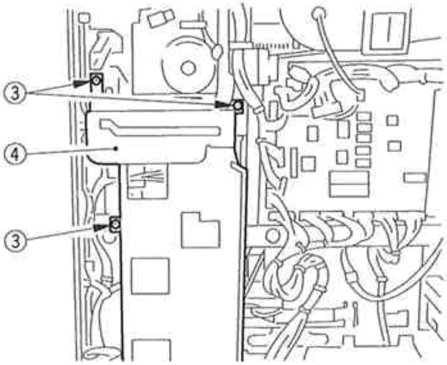


Figure 7-450

6) Remove the two mounting screws, and remove the harness guide 2 ⑥.

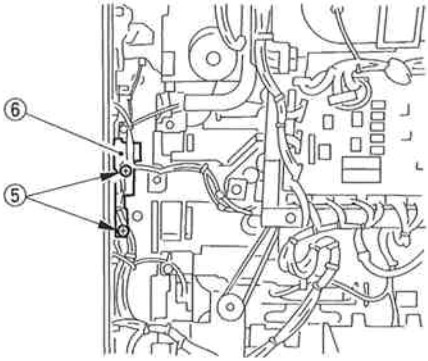


Figure 7-451

7) Remove the four mounting screws ⑦, and disconnect the connector ⑧; then, remove the vertical path drive assembly ⑨.

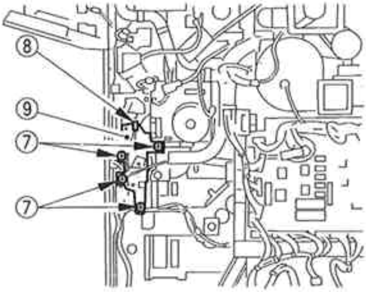


Figure 7-452

J. Pick-Up Drive Assembly

1. Construction

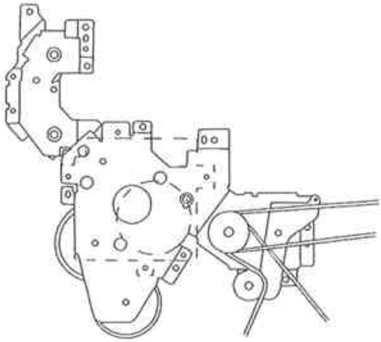


Figure 7-453

2. Removing the Pick-Up Drive Assembly

1) Open the front door, and slide out the process unit, fixing/feeding unit, and holding tray assembly about 10 cm from the copier.
2) Remove the rear cover.
3) Remove the high-voltage transformer PCB and the high-voltage transformer assembly.
4) Remove the waste toner bottle.
5) Remove the cleaner fan, feeding fan, and developing fan.
6) Remove the fixing/waste toner drive assembly.
7) Free the harness guide 1. (See Figure 7-446.)
8) Detach the timing belt.
9) Remove the two mounting screws ①, and remove the deck relay drive assembly ②.

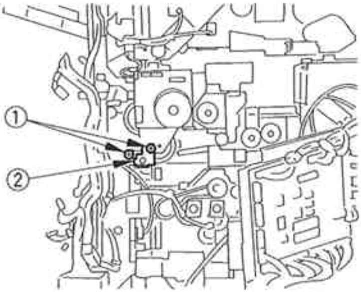


Figure 7-454

10) Remove the eight mounting screws ③, and disconnect the two connectors ④; then, remove the pick-up drive assembly.

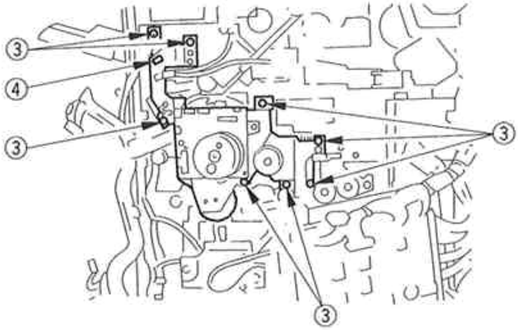


Figure 7-455

K. Duplexing Unit Drive 1 Assembly

1. Construction

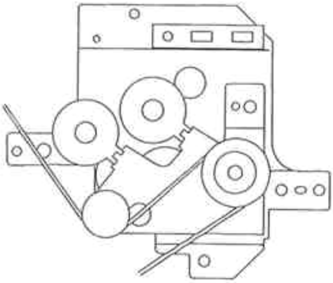


Figure 7-456

2. Removing the Duplexing Unit Drive 1 Assembly

1) Open the front door, and slide out the holding tray assembly about 10 cm from the copier.
2) Remove the rear cover.
3) Remove the DC controller PCB.

4) Remove the spring ① of the tensioner, and remove the timing belt.
5) Remove the four mounting screws ②, and remove the duplexing unit drive 1 assembly ③.

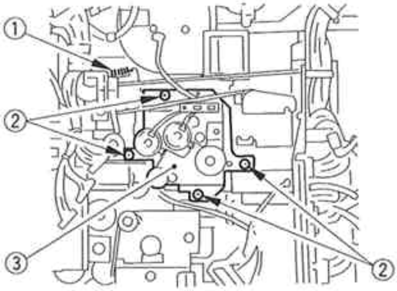


Figure 7-457

L. Lifter Drive Assembly

1. Construction

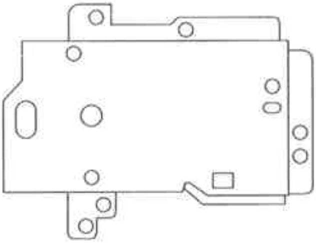


Figure 7-458

2. Removing the Lifter Assembly

1) Open the front door, and slide out the holding tray assembly about 10 cm from the copier.
2) Remove the rear cover.
3) Remove the waste toner bottle.
4) Remove the rear right grip assembly.
5) Remove the three mounting screws ①, and remove the waste toner bottle support plate ②.

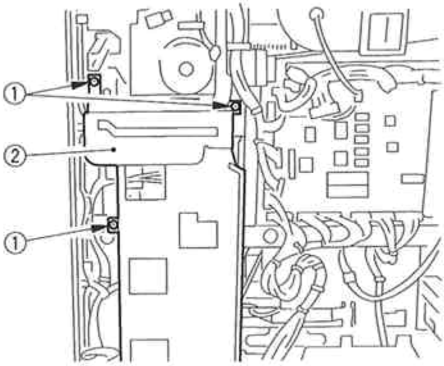


Figure 7-459

6) Disconnect the connector ③, and remove the three screws ④; then, remove the lifter drive assembly ⑤.

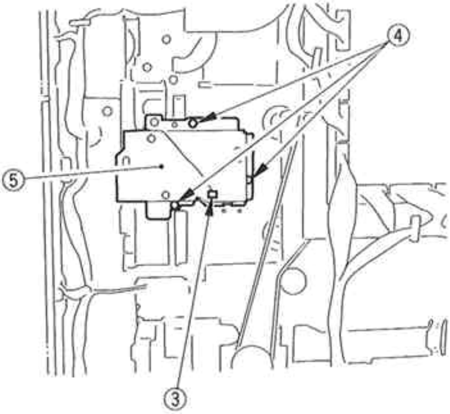


Figure 7-460

M. Cassette Pick-Up Drive Assembly

1. Construction

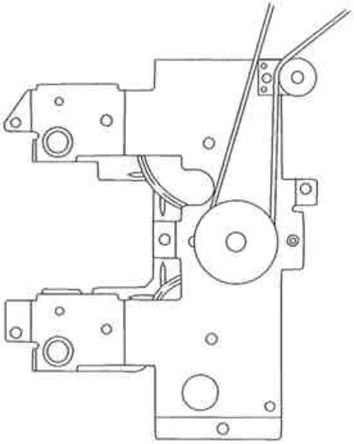


Figure 7-461

2. Removing the Cassette Pick-Up Drive Assembly

1) Open the front door, and slide out the holding tray assembly about 10 cm from the copier.
2) Remove the rear cover.
3) Remove the waste toner bottle.
4) Remove the waste toner bottle support plate.
5) Remove the rear right grip assembly.
6) Remove the DC controller PCB, and detach the timing belt.
7) Remove the two mounting screws ① (two each of the paper width detection assembly of the cassettes 3 and 4); then, disconnect the connector ② (one each).

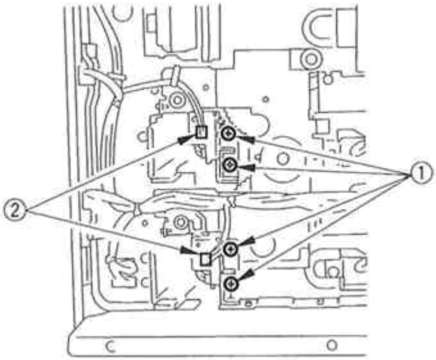


Figure 7-462

8) Remove the five mounting screws ③, and remove the cassette pick-up drive assembly ④.

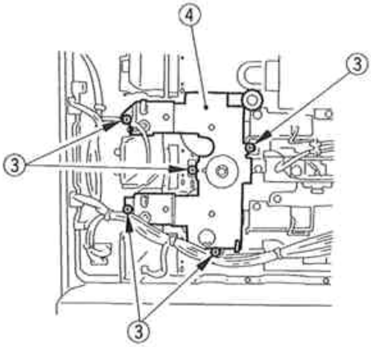


Figure 7-463

N. Attaching the Drive Belt

Attach the drive belt through the gears and rollers as indicated in Figure 7-464.

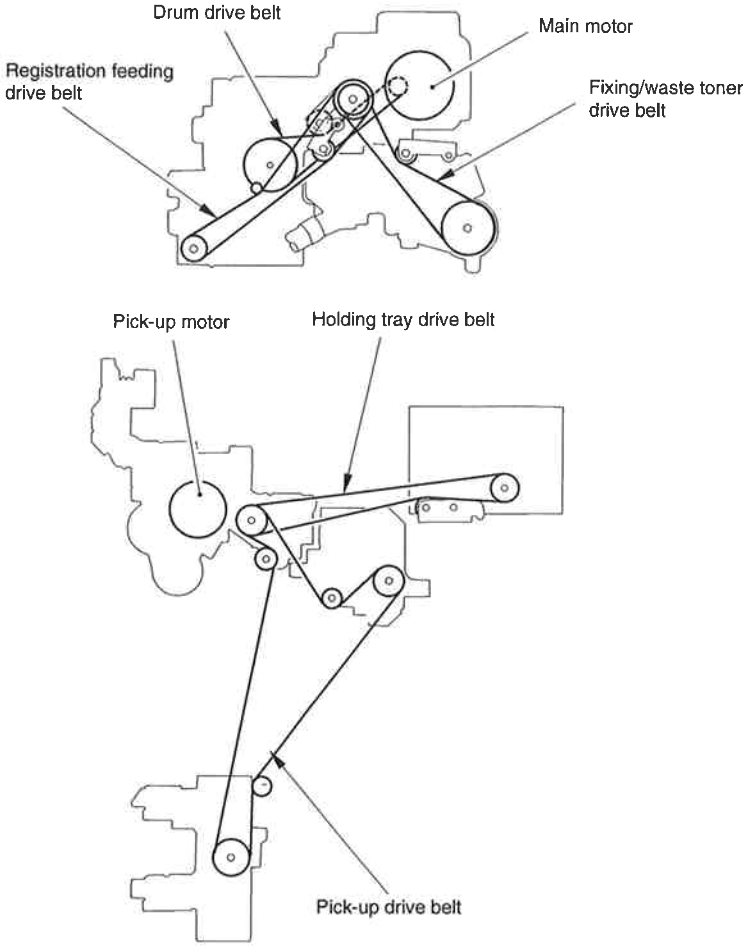

Drum drive belt
Main motor
Registration feeding drive belt
Fixing/waste toner drive belt
Pick-up motor
Holding tray drive belt
Pick-up drive belt

Figure 7-464

Caution:

When installing the holding tray drive belt, be sure to attach the holding tray drive belt on the roller located at the bottom against pick-up drive belt (inside) and to attach the pick-up drive belt on the roller at the top (outside).

O. DC Controller PCB

1. Removing the DC Controller PCB

1) Remove the rear cover.
2) Disconnect the connector from the DC controller PCB.
3) Remove the five mounting screws ① used to hold the mount in place, and remove the DC controller PCB together with its mount ②.

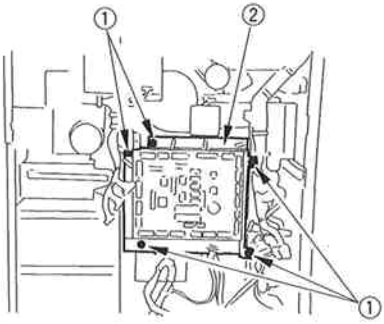


Figure 7-465

Caution:
The DC controller PCB is equipped with a battery (BAT101). Observe the following, as shorting both ends of the battery will cause overheating:

2. Points to Note When Replacing the DC Controller PCB

- When sending the DC controller PCB to the workshop or the factory, put it intact with the mount in a conducting bag. (Use a conducting bag whose one side is transparent so that the face of the PCB shows through it.)
- Make settings in service mode and user mode after replacement.
- When entering settings in service mode, enter the values recorded on the label attached to the front door.

P. DC Power Supply Assembly

1. Removing the DC Power Supply Assembly

1) Remove the upper left cover and the lower left cover.
2) Remove the nine mounting screws ①, and remove the DC power supply protection plate ②.

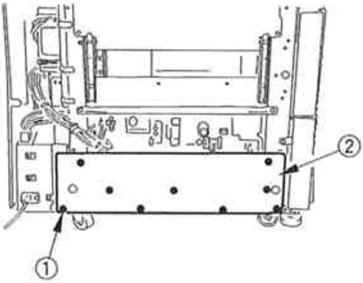


Figure 7-466

3) Disconnect the nine connectors (J303, J304, J305,J306, J308, J309, J311, J312, relay connector).
4) Remove the two mounting screws ③, and remove the DC power supply PCB ④ together with its mount.

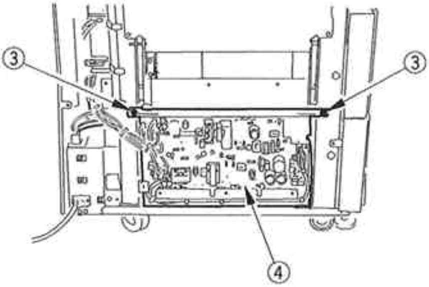


Figure 7-467

Q. High-Voltage Transformer Assembly

1. Remove the High-Voltage Transformer Assembly

1) Remove the rear cover.
2) Disconnect the four connectors ① (J201, J202, J203, J301).
3) Remove the three mounting screws ②, and remove the PCB assembly ③.

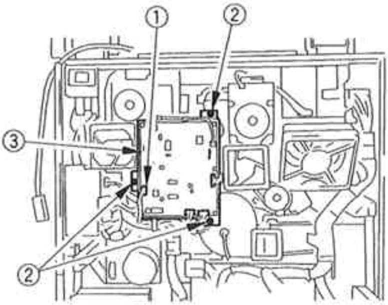


Figure 7-468

4) Remove the two fastons ④, and disconnect the connector ⑤; then, remove the two mounting screws, and remove the transformer assembly ⑦.

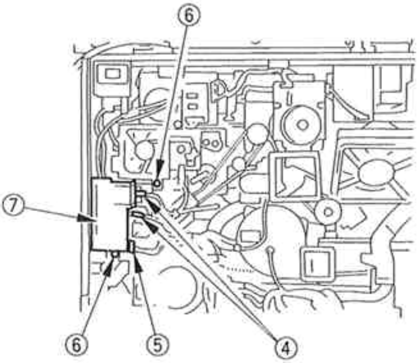


Figure 7-469

Caution:

The high-voltage transformer PCB needs factory adjustment like the transformer assembly itself; you must replace them in a set of two whenever either needs replacement.

R. Power Supply Input Assembly

1) Remove the rear cover.
2) Remove the upper left cover and the lower left cover.
3) Remove the four mounting screws ①.
4) Disconnect the four connectors ②, and remove the power cord mount ③.

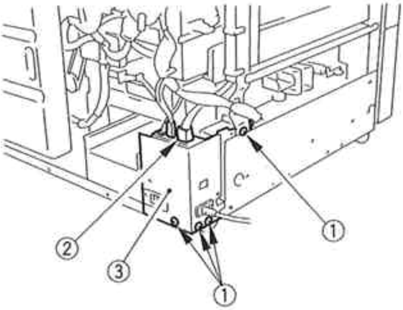


Figure 7-470

CHAPTER 8

INSTALLATION

This chapter introduces requirements for the site of installation, and shows how the copier may be installed using step-by-step instructions.

I. SELECTING THE SITE 8-1

II. UNPACKING AND INSTALLATION 8-3

- A. Unpacking 8-4
- B. Installing the Scanner 8-6
- C. Installing the Fixing Assembly 8-7
- D. Installing the AP Kit and the Charging Assembly 8-9
- E. Installing the Copy Tray 8-15
- F. Checking the Developing Assembly 8-17
- G. Installing the Pick-Up Assembly 8-19
- H. Supplying Toner 8-20
- I. Setting Images/Functions and User Mode 8-24

III. RELOCATING THE MACHINE 8-28

IV. INSTALLING THE CONTROL CARD V 8-29

I. SELECTING THE SITE

Keep the following in mind when selecting the site of installation; if possible, pay a visit to the user's before the delivery of the machine:

1. There must be a power outlet that satisfies the required power ratings and that may be used exclusively for the machine.
2. The temperature must be between 7.5° and 32.5°C (45.5 and 90.5°F) and the humidity, between 5% and 85% RH. In particular, avoid areas near water faucets, water boilers, humidifiers, and refrigerators.
3. Avoid areas near sources of fire and areas subjected to dust or ammonium gas. Avoid direct rays of the sun; provide curtains as necessary.
4. The level of ozone generated when the machine is in operation will not affect the health of the individuals near it. However, since some may find it unpleasant, be sure that the room is well ventilated.
5. The floor must be flat so that the feet of the machine will remain in contact and the machine will be kept level.
6. The space must be large enough to allow at least 10 cm / 3.9 in. from all walls so that the machine may be operated without obstacles.

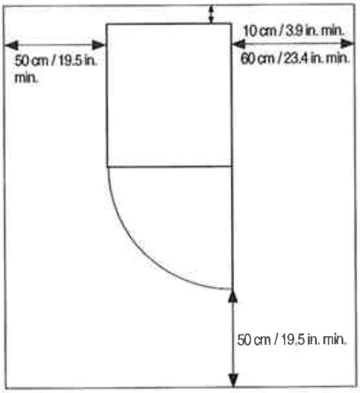


Figure 8-101

7. The site must be well ventilated. If multiple machines are installed, be sure that the exhaust from other machines will not flow into the machine.
   Be sure not to install the machine near air inlets used for ventilating the room.

Note:
Generally, silicone gas (vapors of silicone oil from the fixing assembly) emitted by a copier soils corona charging wires, making the life of the wires shorter. This is more conspicuous in a low humidity environment.

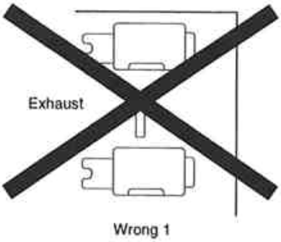

Exhaust
Wrong 1

Figure 8-102

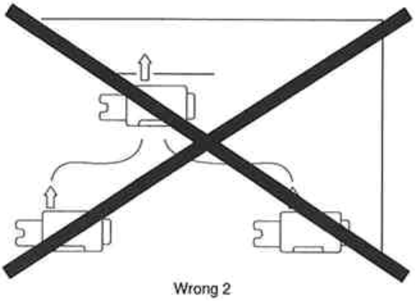


Figure 8-103

II. UNPACKING AND INSTALLATION

When a piece of metal is brought in from a cold to warm place, droplets of water tend to form on its surface. This phenomenon is known as condensation, and a copier suffering from condensation can generate blank copies.

If you are installing a machine brought in from a cold place, leave it alone without unpacking for at least one hour before starting the installation work.

Note:

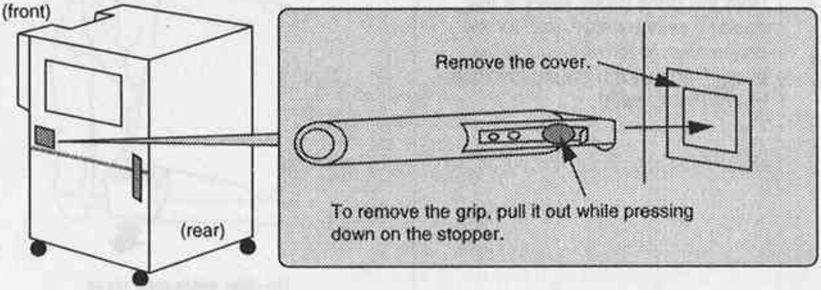
A. If you are using stairs when moving the machine into or out of the user's, keep the following in mind:
  1. Remove the fixing/feeding assembly, holding tray, and copy paper from the machine, and carry them separately from the machine. (If an RDF is installed, detach it also.)
  2. When holding the machine, do not use the grips on the pick-up or delivery assembly; support it holding the four corners of the machine bottom.

B. If the site of installation has a relatively high humidity, the image fault may occur. It is recommended that the drum heater switch be turned ON to avoid such a problem. If the site registers 60T or more under 'RHUM' (machine inside humidity) in service mode (*1*), you must turn on the drum heater switch by pressing its right side.

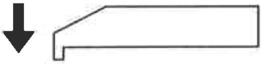
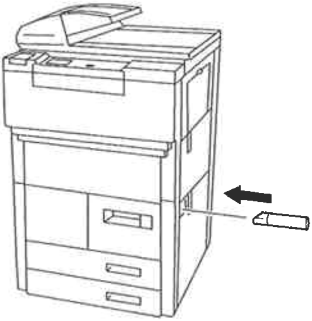
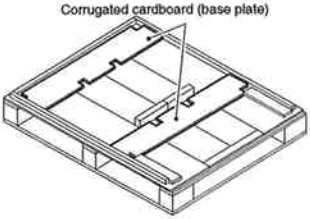
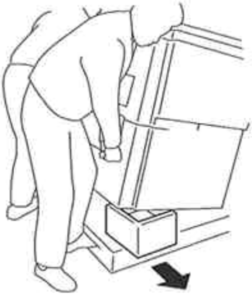
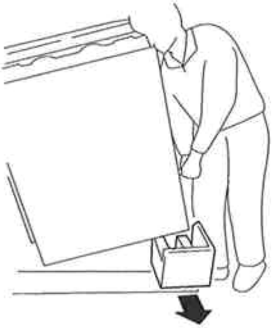
C. Turn up the two adjusters located on the bottom of the machine (2 at front), and make sure that they are unlocked. You must be careful to make sure that the adjusters will not fall off the bottom of the machine in transit because of vibration.

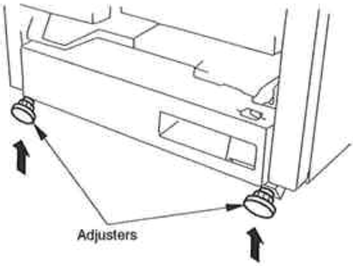
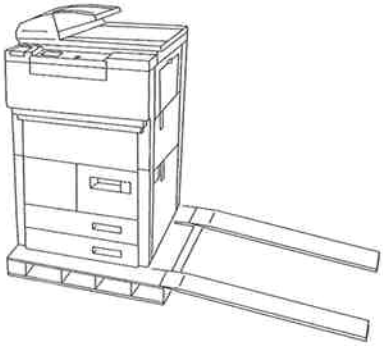
D. You must work in a group of three or more. When removing the pads, in particular, make arrangements so that one person can hold the grip at the rear and another at the front, while yet another person removes the pad and the base plate.

E. Go through the following when moving the machine:
  1. Find the grip inside the case attached to the machine for use in the location indicated by the arrow.
  2. Make sure that the grip is fully inside the slot before lifting the machine. (Take extra care to be sure that the grip will not slip off while lifting the machine.)
  3. The machine weighs about 190 kg. Be sure to work in a group of four when lifting it.

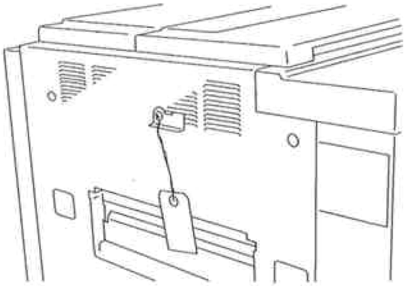

(front)
(rear)
Remove the cover.
To remove the grip, pull it out while pressing down on the stopper.

A. Unpacking

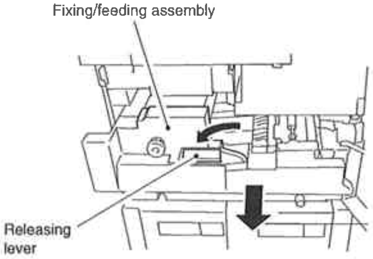
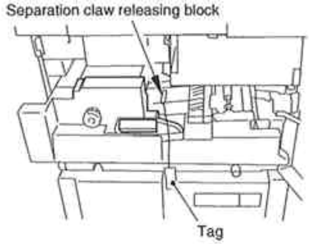
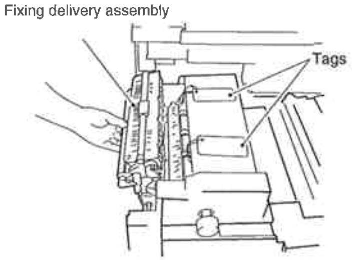
No.	Work	Checks/remarks
1	Unpack the copier, and remove the plastic sheet.	
2	Push in the grip (accessory) into the front of the pick-up side.  **Caution:** **Keep the stopper of the grip facing downward; otherwise, it may slip off when the copier is lifted.**	
3	Hold the grips (front, rear) of the copier's pick-up side, and lift the copier slightly to remove the two pads. Remove the corrugated cardboard (base plate).  	  The copier weighs about 190 kg.
4	Hold the grips (front, rear) of the copier's delivery side, and lift the copier slightly to remove the two pads. Remove the corrugated cardboard (base plate).	

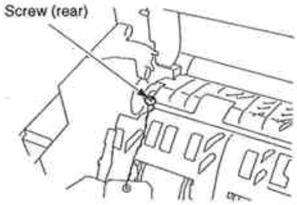
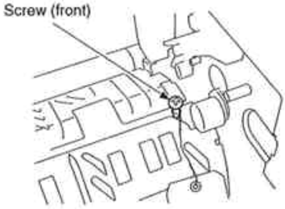
No.	Work	Checks/remarks
5	Check to make sure that the two adjusters (2 at front) on the copier's bottom are shifted up and released.	
6	Slide out the two slope plates from the skids.	
7	Turn over the slope plates, and insert fixing pins (1 each) through the pin holes of the skids and the pin holes in the slope plates. • Hold the copier's grips (front, rear), and put if off the skid plates by sliding it along the slope plates.	
8	Open the cardboard box, and take out the parts and accessories.	Check to make sure that the following accessories are available: • Copy tray • Delivery gear (black) • Toner • Grip (1 pc.) • Drum rotating tool • Mode memory sheet • Grip assembly cover (large; 3 pcs.) • Grip assembly cover (small; 1 pc.) • Original tray (2 mounting screws) • Operator's Manual • Developing assembly (1 pc.) • Drum protection sheet • Cassette size label

B. Installing the Scanner

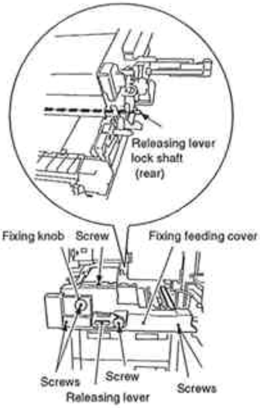
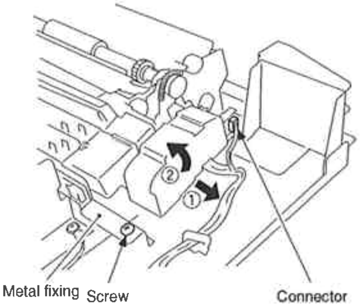
No.	Work	Checks/remarks
1	Remove the copier's taping.	
2	Open the RDF.	Remove the protection tape of the size index and the protection sheet of the copyboard glass.
3	Remove the scanner fixing (packing tape). (keep the metal fixing for possible relocation of the machine.)	

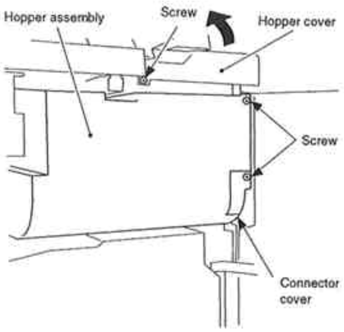
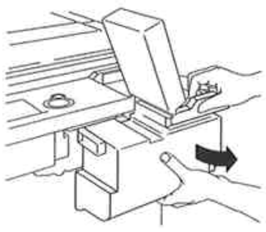
C. Installing the Fixing Assembly

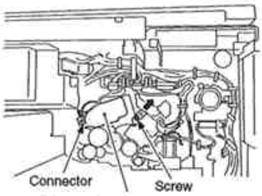
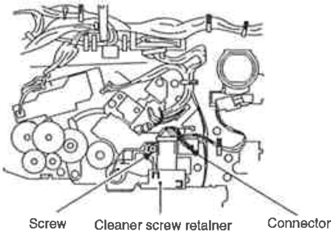
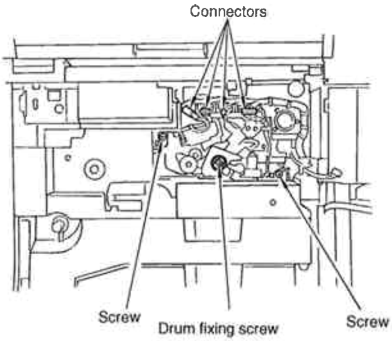
No.	Work	Checks/remarks
1	Open the front door.	
2	Shift the fixing/feeding assembly releasing lever in the direction of the arrow (left) to release the transfer/separation charging assembly. Slide out the fixing/feeding unit to the front.	 Fixing/feeding assembly Releasing lever
3	Remove the tag and the separation claw releasing block of the fixing/feeding assembly. **Caution:** Be sure to remove strips of tape and particles of glue from the feeding belt.	 Separation claw releasing block Tag
4	Remove the retaining tag, and open the fixing assembly/delivery assembly.	 Fixing delivery assembly Tags

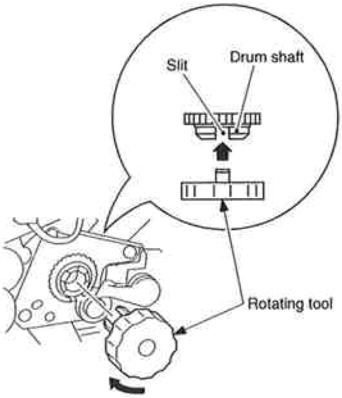
No.	Work	Checks/remarks
5	Remove the two fixing nip releasing screws.	  Screw (front)
6	Close the fixing/delivery assembly.	

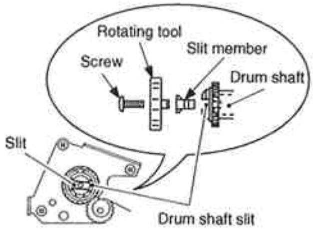
D. Installing the AP Kit and the Charging Assembly

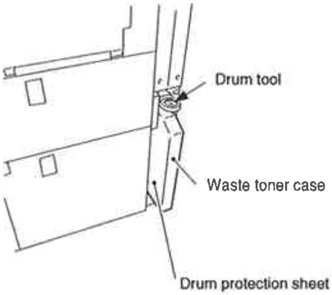
No.	Work	Checks/remarks
1	Remove the screw from the releasing lever of the fixing feeding assembly. While pushing the rear of the releasing lever lock shaft (on the side of the fixing feeding inside), shift the releasing lever to remove the lever. Remove the screw, and remove the fixing knob; remove the three screws, and remove the fixing feeding cover.	 Releasing lever lock shaft (rear) Fixing knob Screw Fixing feeding cover Screws Screw Releasing lever Screws
2	Remove the metal fixing (1 screw), and disconnect the connector; while pushing the front and the rear of the transfer/separation charging assembly, pull it to the front and then remove it toward the upper rear. Using alcohol, clean the transfer/separation charging assembly. Install the transfer/separation charging assembly, and connect the connector. Install the metal fixing. **Caution:** Take care to avoid contact between the transfer/separation charging assembly and the transfer guide so that the gut wire will not be cut. Be sure that the charging assembly is fully dry.	 ② ① Metal fixing Screw Connector

No.	Work	Checks/remarks
3	Install the fixing/feeding assembly front cover with three screws. Install the fixing knob and the releasing lever; then, put the lever in release state (lever on left). Push the fixing/feeding assembly inside the machine.	
4	Open the multifeeder door and the upper right door, and remove the screw from the black tape (door stopper) of the front door. (This is to prevent the front door from closing the hopper after the hopper has been opened.)	
5	Remove the tape from the tag attached to the hopper assembly.	
6	Open the hopper cover, and remove the three screws and the connector cover.	 Hopper assembly Screw Hopper cover Screw Connector cover
7	Disconnect the connector, and release the hopper assembly.	
8	Slide out the hopper assembly to the front, and turn the front right side 90°.	

No.	Work	Checks/remarks
9	Disconnect the connector, and loosen the screw; then, while moving the charging assembly fixing in the direction of the arrow (upper right), fix it in position with a screw. Using alcohol, clean the primary charging assembly.	 Connector Screw Primary charging assembly
10	Disconnect the connector, and remove the screw. Take out the pre-transfer charging assembly. Using alcohol, clean the pre-transfer charging assembly.	 Screw Cleaner screw retainer Connector
11	Disconnect the four connectors, and remove the two screws. (You will remove the drum fixing screw in step 7.) **Caution:** Remove the harness from the edge saddle.	 Connectors Screw Drum fixing screw Screw

No.	Work	Checks/remarks
12	Insert the drum rotating tool into the slit in the drum shaft. Holding the rotating assembly so that the drum will not turn in counterclockwise direction, remove the drum fixing screw and the drum fixing (from the slit). **Caution:** **1. If the drum is let to rotate in counterclockwise direction, the cleaning blade will not come into contact correctly with the drum, possibly causing cleaning faults. Be sure to remove the drum fixing screw only after holding the drum in place.** **2. Do not expose the photosensitive drum to light more than 30 min.** **3. Never expose the photosensitive drum to direct rays of the sun.** **4. When placing the photosensitive drum or the process unit outside, be sure to cover it using six more sheets of copy paper to block out the light.**	
13	While paying attention to the hopper, slide out the fixing feeding assembly. Place the drum protection sheet (accessory) to protect the rubber roller of the registration roller assembly and the drum.	
14	Slide out the process unit to the front, and insert the drum rotating tool into the front of the drum shaft; while rotating the drum, check that it is free of scratches.	

No.	Work	Checks/remarks
15	Insert the process unit into the machine, and match the slit in the drum axis and the slit in the drum using the drum rotating tool. Then, while holding the drum in place by the drum rotating tool with the drum fixing (slit member), insert a screw in the tool.	 Rotating tool Slit member Screw Drum shaft Slit Drum shaft slit
16	Remove the drum protection sheet from the fixing feeding assembly; then, insert the fixing assembly into the copier.	
17	Tighten the two mounting screws on the process unit. Connect the four connectors. Insert the primary charging assembly and the pre-transfer charging assembly, and fix them in place. Put the harness through the edge saddle.	**Caution:** 1. Check to make sure that each charging assembly is fully dry. 2. When inserting the pre-transfer charging assembly, slide it horizontally in relation to the process unit so as not to damage the surface of the roller electrode. 3. Check to make sure that the one-way arm of the pre-transfer charging assembly is on the eccentric cam.
18	Install the process unit front cover, and close the hopper; then, close the hopper, and connect the connector of the hopper. Tighten the three screws, and install the connector cover; then, close the front door.	

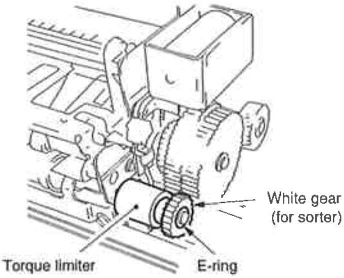
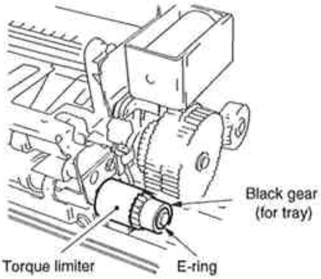
No.	Work	Checks/remarks
19	Remove the two screws, and remove the cover from the copier's rear right (bottom). The drum protection sheet will be used when servicing the process unit. Remove the dirt, if any, and keep it near the waste toner case at the rear together with the drum rotating tool. (Keep the drum rotating tool in the hole in the grip on the waste toner case top together with the waste toner case cap.) **Caution:** **Do not roll the drum protection sheet.**	
20	Install the cover to the copier's rear right (bottom).	

E. Installing the Copy Tray

1. Replacing the Delivery Gear

If you are not installing a sorter or a stapler sorter to the copier, i.e., if you are using the copy tray, you must replace the delivery gear with the gear (black) which is used for copy tray.

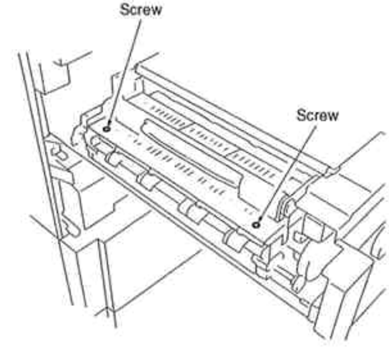
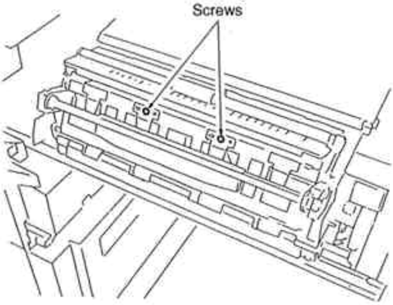
If you are installing a sorter or a stapler sorter to the copier, check to make sure that the gear is as indicated in step 1, and do NOT perform any of the steps.

No.	Work	Checks/remarks
1	Open the front door, and slide out the fixing feeding assembly; then, remove the fixing knob, releasing lever, and fixing delivery cover. Remove the E-ring, and remove the delivery gear from the copier.	
2	Replace the gear with the delivery gear (black) attached to the copy tray, and install the E-ring. **Caution:** Be sure to match the groove on the female side of the replaced gear and the male side of the torque limiter.	

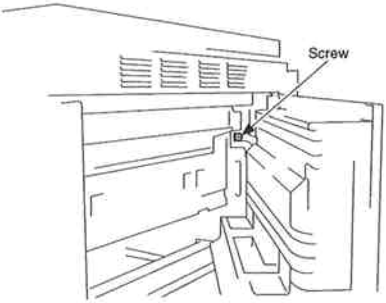
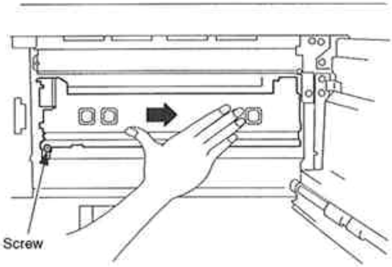
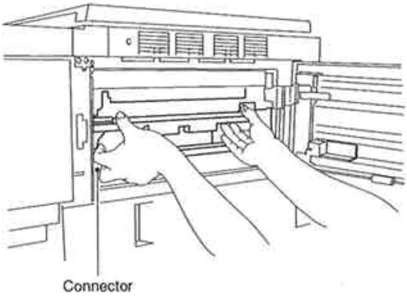
2. Replacing the Leaf Springs of the Delivery Roller

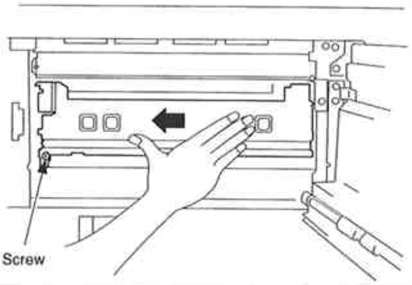
If you are not installing a sorter or a stapler sorter to the copier, i.e., if you are using the copy tray, you must replace the leaf springs (2 pcs.) of the delivery roller with the leaf springs (identified by a blue label; with weak spring pressure) which are used for the copy tray.

If you are not installing a sorter or a stapler sorter to the copier, check to make sure that the two leaf springs at the center are stronger than the two leaf springs on both ends, and do NOT perform any of the following steps:

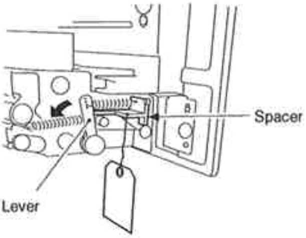
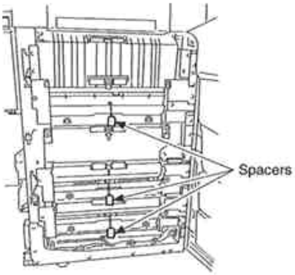
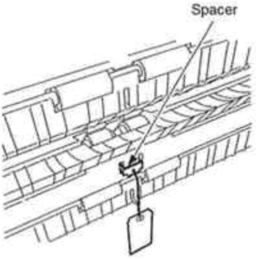
No.	Work	Checks/remarks
1	Remove the two screws, and remove the fixing delivery assembly cover.	
2	Remove the screw, and remove the two leaf springs at the center (w/ rolls). Separate the leaf springs and the rolls.	
3	After installing the rolls to the leaf springs (accessory), install the leaf springs to the fixing delivery assembly.	
4	Install the fixing delivery assembly cover with two screws; then, push in the fixing feeding assembly into the copier, and close the front door.	

F. Checking the Developing Assembly

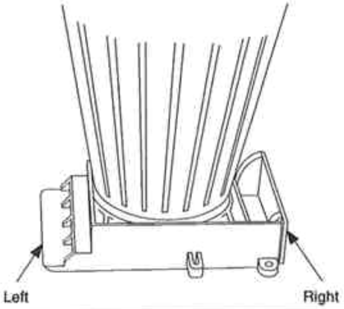
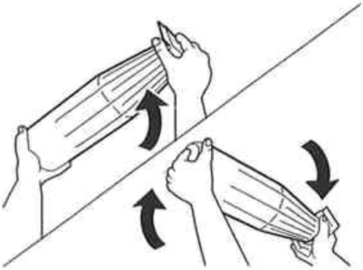
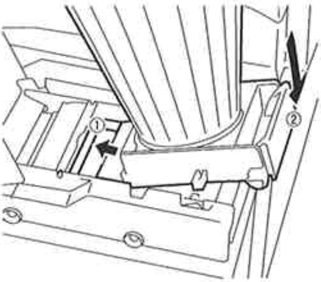
No.	Work	Checks/remarks
1	Open the multifeeder tray, and remove the screw from the black tape.	
2	Remove the screw, and slide the developing assembly locking unit in the direction of the arrow (rear) to remove.	
3	Take out the developing assembly from the shipping box. By turning the developing assembly cylinder gear by hand, check the cylinder for scratches.	
4	Holding the center (grip pocket) of the developing assembly, install it to the copier. Connect the connector. **Caution:** When installing the developing assembly, insert it from a high position, and take care not to bring the developing cylinder into contact with the metal plate of the developing assembly base.	

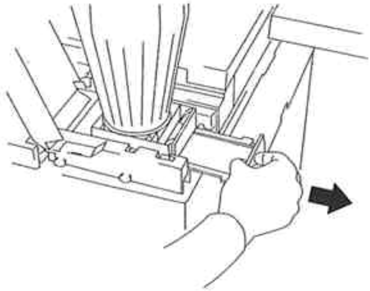
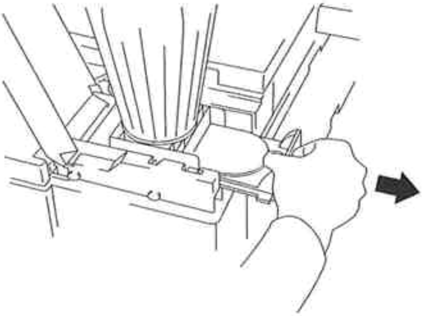
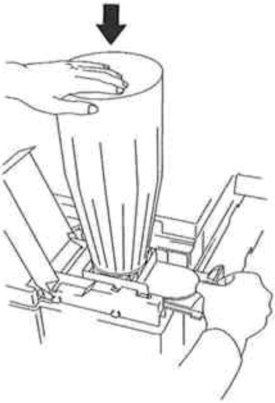
No.	Work	Checks/remarks
5	Insert the developing assembly locking unit from the right side (rear), and insert it to the left (front) when it is horizontal. Tighten the screw on the developing assembly locking unit.	
6	Install the black tape of the multifeeder with a screw.	
7	Close the multifeeder door.	

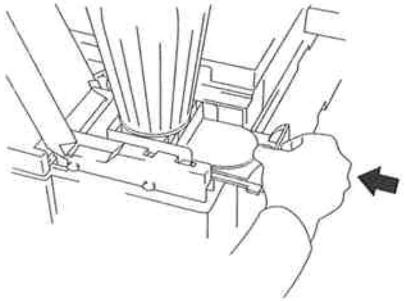
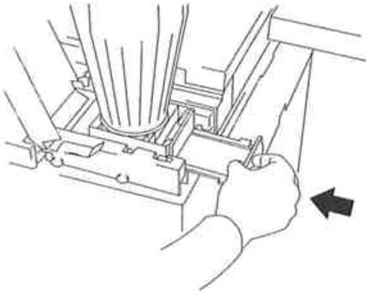
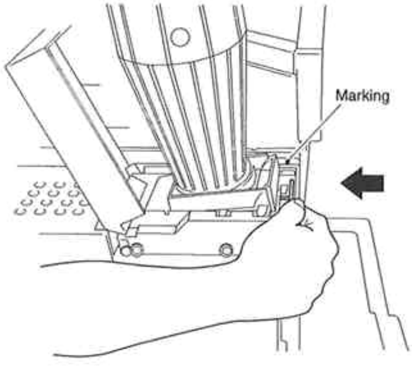
G. Installing the Pick-Up Assembly

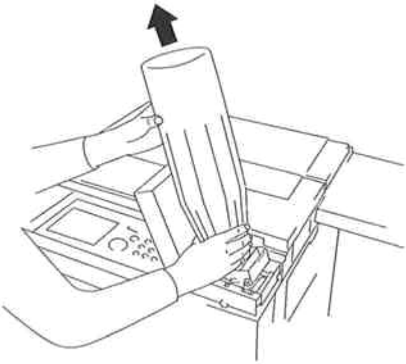
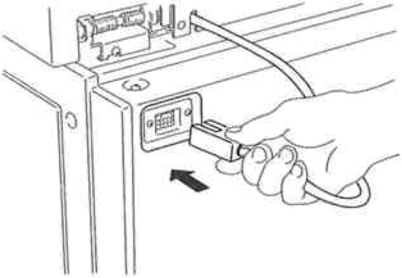
No.	Work	Checks/remarks
1	Open the multifeeder. Holding the grip on the multifeeder, open the multifeeder door. Shift the lever in the direction of the arrow, and take out the pick-up roller releasing spacer.	
2	Slide out the right deck/cassette half way, and open the upper right cover and lower right cover; then, remove the pick-up roller releasing spacers of the holders 3 and 4 of the paper deck. **Reference:** It is difficult to remove the spacers without removing the cassettes, as they are locked in place.	 

H. Supplying Toner

No.	Work	Checks/remarks
1	Check the sides (left/right) of the mouth for the toner bottle.	
2	Shake the toner bottle well about ten times.	
3	Open the hopper cover, and fit the boss on the tip of the toner bottle in the groove of the toner supply mouth. • The toner supply mouth and the toner bottle will become locked in position.	

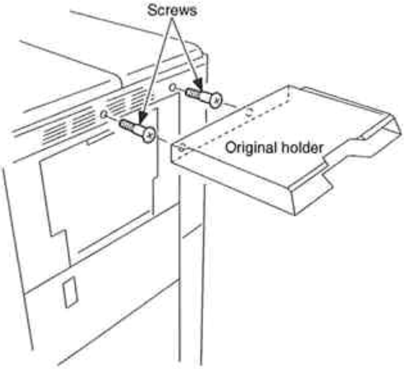
No.	Work	Checks/remarks
4	Holding the copier's shutter (black) on the right side of the toner supply mouth of the hopper, pull it to the right until it stops.	
5	Pull the shutter on the toner bottle side to the right.	
6	When toner has dropped from the toner bottle to the hopper, lightly tap on the bottom of the toner bottle to make sure all toner has moved into the hopper.	

No.	Work	Checks/remarks
7	Holding the shutter of the toner bottle, push it to the left until it stops.	
8	Holding the copier's shutter, push it to the left until it stops.	
9	Push the copier's shutter up to the marking ⏮ on the hopper assembly. • This will unlock the toner bottle.	

No.	Work	Checks/remarks
10	Pull the toner bottle in the upper left direction to remove.	
11	Close the hopper cover.	
12	Remove the connector face plate for the RDF.	
13	Connect the RDF's connector (male) into the copier's connector (female).	

I. Setting Images/Functions and User Mode

No.	Work	Checks/remarks
1	Connect the power plug to the power outlet, and insert the door switch actuator into the door switch assembly of the front door.	
2	Slide out the holding tray and the holding tray feeding assembly; then, check to make sure that there is no foreign matter and the parts are free of damage.	
3	Slide out the paper deck and the cassette to the front, and remove the packing material.	Make sure all packing material has been removed before turning on the power.
4	Turn ON the power switch.	• Adjust the Contrast key so that the display on the control panel has appropriate contrast for good viewing; explain to the user how this may be done. • Check that the Add Paper indicator turns ON. • Press keys on the keypad and the Clear key to make sure that the copy count is correct.
5	Set the size guide plate to suit the user's needs.	
6	Put copy paper in the cassette and the paper deck.	
7	Attach the appropriate stickers to the paper size plate of the cassette and the paper deck.	
8	Push in the cassette and the paper deck into the copier.	
9	Insert the copy tray into the copier.	

No.	Work	Checks/remarks
9	After the WAIT period is over, start service mode by inserting a paper clip or the like into the hole in the copier's upper left inside cover. Select 'TONER-S' (*4*), and press the user mode key *. ↓ Check to make sure that the message 'CHECK THE DEVELOPER' has appeared. ↓ After checking the installation of the developing assembly, press the OK key. ↓ Press the user mode key *. ↓ Execute toner supply (from hopper to developing assembly; about 8 to 10 min). ↓ ↓ Press the Reset key twice to end service mode.	• Close the front door so that light will not enter the inside of the machine. • This mode will operate for a maximum of about 10 min, supplying toner from the hopper to the developing assembly. • Do NOT turn off the power while the machine is operating.
10	Using two screws, install the original holder while toner is being supplied. (You may install it on the left side of the copier if you are not installing a sorter.)	

No.	Work	Checks/remarks
11	When toner has been supplied, place the Test Sheet on the copyboard, and make copies to check the image. Toner may fall from the drum separation claw to cause soiled images on the first ten or so copies; such a condition will disappear when more copies have been made. Check to make sure that paper is picked up from all sources of paper.	• Check to make sure that there is no abnormal sound. • Make copies at each default ratio, and check the copy image of each. • Check to make sure that as many copies as set are made normally. • If the density is different between left and right, adjust the height of the rear of the primary charging assembly to correct.
12	Make two-sided and overlay copies.	• Check to make sure that copying operation is normal. • Check to make sure that there is no abnormal sound. • Check to make sure that paper movement at the holding tray assembly is normal.
13	Set the standard mode in user mode and service mode (*5*) to suit the user's needs. Register the paper size for the paper deck in service mode (*5*). DK-SZ-R (paper deck) Press the Reset key twice to end service mode.	
14	Remove the door switch retaining tool, and install the cover, fixing knob, and releasing lever to the fixing feeding unit; then, close the front door.	
15	Clean up the area around the machine.	
16	Move the copier to the site of installation, and fix it in position using the two adjusters.	
17	As necessary, turn ON the drum heater switch (by pushing it on the right side) to suit the environment.	

No.	Work	Checks/remarks
18	Put the grip attached to the front of the pick-up side under the grip on the pick-up rear side. Install the three covers (large) and one cover (small) of the grip assembly.	
19	If you are installing options such as a sorter, complete this step and install them as instructed in their respective Installation Procedures.	
20	Fill out the service sheet.	

III. RELOCATING THE MACHINE

Go through the steps in the table when relocating the machine by truck or other means of transportation.

Step	Work	Checks	Remarks
1	Make a copy in Direct.		
2	Remove all copy paper from the paper deck and all cassettes.		
3	Turn off the power switch, and disconnect the power plug.	Make sure that the lens is inside the lens hood.	
4	Fix the No. 2 mirror mount in place with the locking plate from the left cover side.	Make sure that the No. 2 mirror mount is fixed and will not move.	
5	Remove the developing assembly.	Transport the developing assembly in a separate box.	
6	Tape the transfer corona assembly, fixing/feeding unit assembly releasing lever, holding tray assembly, and holding tray feeding assembly in place.		
7	Tape the front door, hopper cover, cassettes, left/right paper deck cover, and right door (upper, lower) in place.		
8	Place an A3/11" × 17" sheet of copy paper on the copyboard glass, and tape the RDF in place.		

Caution:

A. If you are using stairs when moving the machine into or out of the user's by stairs, keep the following two points in mind:

1. Draw out the fixing/feeding unit assembly and the holding tray, and remove all copy paper; carry them separately from the machine. (If the RDF is installed, remove it.)
2. When holding the machine, do not use the grips on the pick-up assembly/delivery assembly, but hold the machine on its four corners at the bottom.

B. You must always make sure that the two adjusters (2 at front) found on the bottom of the machine are turned up (released). At times, the adjusters can slip out of place; be careful not to lose them.

IV. INSTALLING THE CONTROL CARD V

1) Open the RDF, and remove the three mounting screws ① and the three fixings (RDF catches) ②.

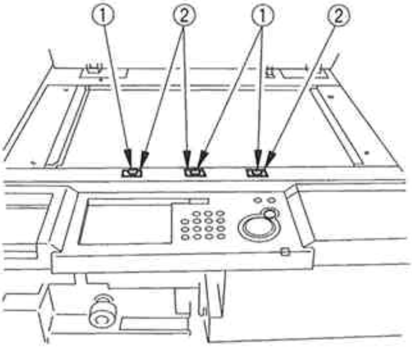


Figure 8-401

2) Remove the three screws ③ from the front side on the copier's upper right cover.

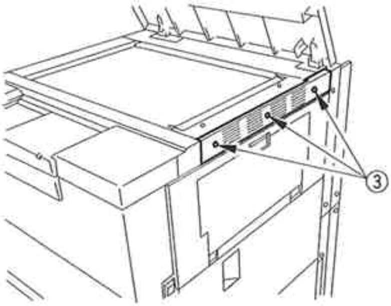


Figure 8-402

3) Remove the screw ④ from the control panel.

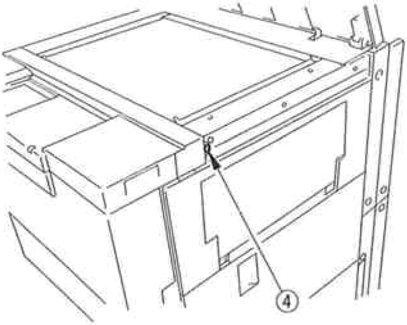


Figure 8-403

4) Open the front door, and open the hopper cover. Remove the three screws ⑤ and the connector cover ⑥, and disconnect the connector; then, slide the hopper assembly ⑦ to the front, and rotate it.

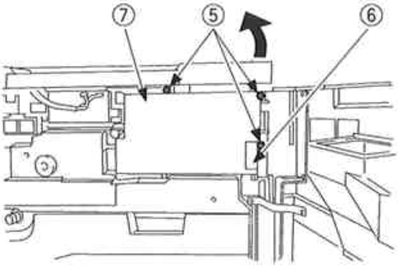


Figure 8-404

5) Shift the fixing feeding assembly releasing lever ⑧ from vertical to horizontal position, and slide out the fixing feeding assembly ⑨.

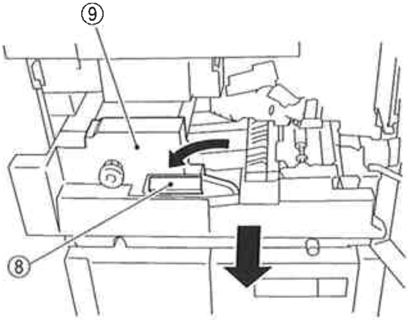


Figure 8-405

6) Remove the three screws ⑩, and remove the upper inside cover ⑪; then, push in the fixing feeding assembly.

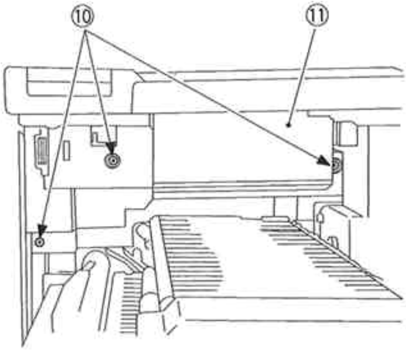


Figure 8-406

7) Remove the three screws ⑫; then, remove the control panel, and turn it over.

Caution:
Take care not to damage the surface of the control panel by the copier's chassis.

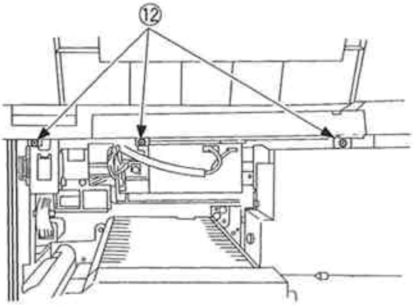


Figure 8-407

8) Remove the five tapping screws ⑬, and slide the PCB cover ⑭ 5 mm to the right to remove the control panel PCB cover.

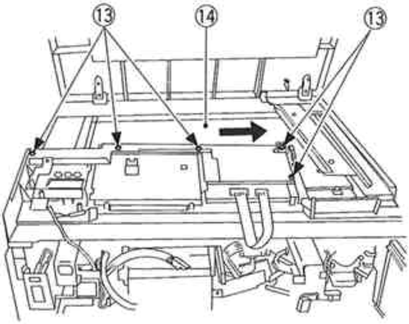


Figure 8-408

9) Remove the control card inlet face plate ⑮.

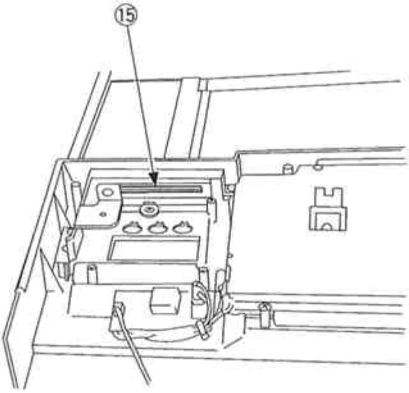


Figure 8-409

10) Remove the face plate screw ⑯.

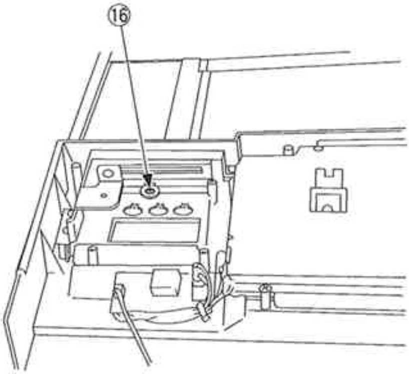


Figure 8-410

11) Place the sheet ⑰ over the hole in the control panel (display opening of the Control Card V).

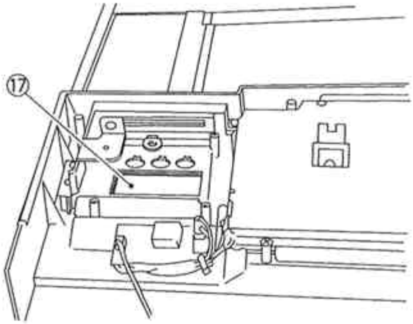


Figure 8-411

12) Remove the protection sheet from the display of the Control Card V.
13) Fix the Control Card V in place on the control panel using four screws ⑱. (Slide a card into and out of the Control Card V, and fix the Control Card V in place where the card may be moved easily.)

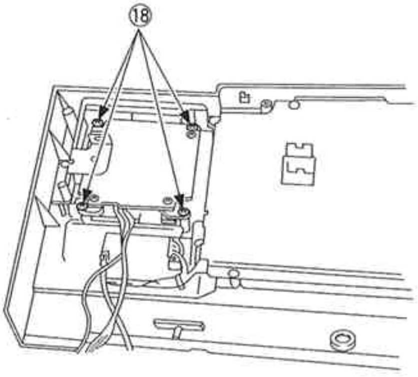


Figure 8-412

Check to make sure that the connector ⑲ of the printer is centered over the hole.

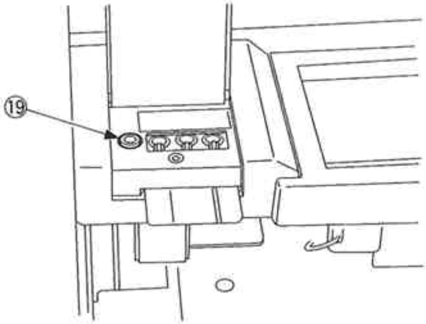


Figure 8-413

14) Install the grounding wire ⑳ of the Control Card V as indicated in Figure 8-414.

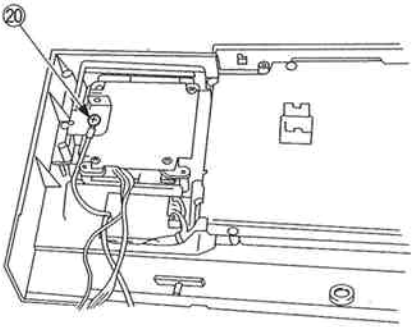


Figure 8-414

15) Disconnect the shorting connector ㉑ shown in Figure 8-415.

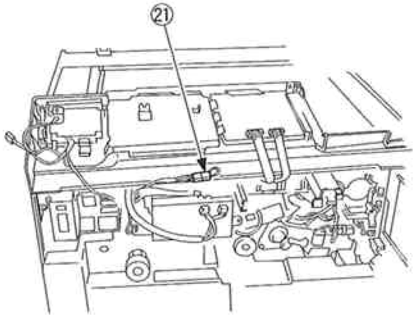


Figure 8-415

16) Connect the 4P connector of the Control Card V and the 4P connector of the copier.

Caution:
Be sure to lead the connector wire through the harness retainer so that it will not come into contact with the scanner cable and the drive pulley.

17) Remove the protection sheet from the control panel of the Control Card V.
18) Attach the control panel nameplate ㉒ of the Control Card V to the copier's control panel.

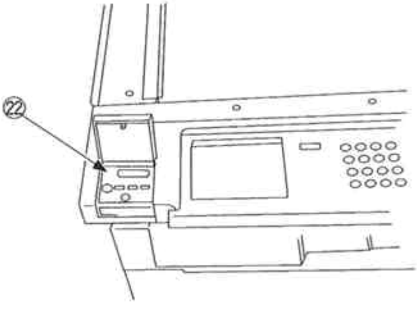


Figure 8-416

19) Install the control panel to the copier.
20) Install the hopper and the cover to the copier.

Caution:
Check to make sure that the connector is connected when installing the hopper assembly.

21) Turn ON the copier, and check the operation of the Control Card V.

CHAPTER 9

MAINTENANCE AND SERVICING

This chapter provides tables of periodically replaced parts and consumables/durables and scheduled servicing charts.

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I. PERIODICALLY REPLACED PARTS

Some parts of the machine must be replaced on a periodical basis to ensure a specific level of machine performance; they must be replaced regardless of external deterioration or damage. Plan the replacement so that it coincides with scheduled servicing.

as of March 1997

No.	Parts	Parts No.	Q'ty	Life (copies)	Remarks
1	Primary/pre-transfer/transfer/ separation corona wire	FY3-0030-000	AR	250,000	100V
		FY3-0040-000	AR	250,000	120/220/240V
2	Primary charging assembly grid wire	FY1-0883-000	AR	500,000	

Note: The above values are estimates only and are subject to change based on future data.

Table 9-101

II. CONSUMABLES AND DURABLES

Some parts of the machine may require replacement because of wear or damage over the period of warranty. Replace them as necessary.

A. Copier

as of March 1997

No.	Parts	Parts No.	Q'ty	Life (copies)	Remarks
1	Multifeeder pick-up roller	FF5-1220-000	1	120,000	Front
		FF5-1221-000	1	120,000	Rear
2	Multifeeder feeding roller	FB2-7522-000	2	120,000	
3	Multifeeder separation roller	FB2-7545-000	1	120,000	
4	Scanning lamp	FH7-3280-000	1	250,000	100V/120V
5	Scanning lamp	FH7-3282-000	1	250,000	220V/240V
6	Cleaner separation claw	FB2-6899-000	3	250,000	
7	Fixing cleaning belt	FA3-8908-000	1	250,000	
8	Delivery upper separation claw	FC1-0391-030	6	500,000	
9	Pick-up roller (paper deck, cassette)	FF5-1220-000	3	250,000	Rear
		FF5-1221-000	3	250,000	Front
10	Feeding roller (paper deck, cassette)	FB2-7695-000	6	250,000	
11	Separation roller (paper deck, cassette)	FB2-7777-000	3	250,000	
12	Duplexing pick-up crescent roller	FC2-1532-000	2	250,000	
13	Duplexing upper separation belt	FA5-5427-000	8	250,000	
14	Duplexing feeding roller	FC2-1533-000	1	250,000	
15	Primary charging wire cleaner 1	FF2-3552-000	2	500,000	
16	Primary charging wire cleaner 2	FF2-3551-000	2	500,000	
17	Transfer charging wire cleaner	FF2-3551-000	1	500,000	
		FF2-3552-000	1	500,000	
18	Separation charging wire cleaner	FF5-3090-000	2	500,000	
19	Pre-transfer charging wire cleaner	FF5-3090-000	1	500,000	
20	Pre-transfer charging assembly scraper	FA4-1867-000	1	500,000	
21	Upper fixing roller	FB2-7200-000	1	500,000	
22	Lower fixing roller	FB2-7121-000	1	500,000	

Table 9-201a

No.	Parts	Parts No.	Q'ty	Life (copies)	Remarks
23	Insulating bush (front, rear)	FB2-7239-000	2	500,000	Replace together with upper fixing roller.
24	Fixing main thermistor (TH1)	FH7-7349-000	1	500,000	
25	Fixing sub thermistor (TH2)	FG5-8812-000	1	500,000	
26	Pick-up clutch (cassette)	FH7-5726-000	3	1,000,000	
27	Pick-up clutch (paper deck)	FH7-5729-000	1	1,000,000	
28	Cleaning blade	FA4-1827-000	1	1,000,000	Use two edges; one for 500,000.
29	Primary charging assembly	FG5-4378-030	1	1,000,000	
30	Transfer/separation charging assembly	FG5-4550-090	1	1,000,000	
31	Pre-transfer charging assembly	FG5-4377-050	1	1,000,000	
32	Fixing thermal switch	FH7-7154-000	1	1,000,000	
33	Delivery lower separation claw	FA2-9037-000	2	1,000,000	
34	Developing cylinder	FF5-3086-000	1	1,000,000	
35	Developing roll	FB2-6933-000	2	1,000,000	

Table 9-201b

B. RDF-H1

as of March 1997

No.	Parts	Parts No.	Q'ty	Life (copies)	Remarks
1	Feeding belt	FC1-7815-020	1	200,000	If cleaning is difficult.
2	Pick-up crescent roller	FF5-5191-000	2	250,000	Actual copies made.
3	Separation belt	FE6-3059-000	9	250,000	Actual copies made.
4	Feeding roller	FB3-8814-000	1	250,000	Actual copies made.
5	Separation flapper	FF5-6048-000	3	100,000	Actual copies made.

III. SCHEDULED SERVICING

Caution:

1. Provide scheduled servicing every 250,000 copies.
2. Check the service record before leaving the office, and take replacement parts as necessary.
3. If you have cleaned charging wires, check to make sure that they are completely dry before installing them.

No.	Work	Checks	Remarks
1	Meet the person in charge.	Check the general conditions.	
2	Record the counter reading.	Check faulty copies.	
3	Make test copies.	Check the following: a. Image density b. Background of copies (for soiling) c. Clarity of characters d. Leading edge margin e. Fixing, registration (displacement), back of copies f. Counter operation	Standards: 4.0 ±1.5 mm (Direct)
4	Clean the following: • Grid wire • Shield plate • Roller electrode		Dry wipe with lint-free paper; then, use alcohol to clean.
5	Clean the optical path assembly: • Reflecting plate for original exposure • Side reflecting plate for original exposure • Lens • No. 1, 2, 3, 4, 5, 6 mirrors • Dust-proofing glass • Pre-exposure lamp plastic sheet • Standard white plate • Heat absorbing glass		Use a blower brush. If the dirt cannot be removed, use alcohol. Moist cloth Dry wipe.
6	Check the waste toner case.	If the case is more than half full, dispose of the waste toner in a plastic bag. Or, replace the waste toner case.	

No.	Work	Checks	Remarks
7	Clean the transfer guide. • Transfer guide plate (upper, lower) • Transfer/separation charging guide rail		
8	Check and clean the cleaning assembly. • Magnet roller (check) • Separation claw (clean) • Side scraper (check)	If the coating on the magnet roller is uneven, • Rotate the magnet roller counterclockwise to remove paper lint and dust. • Remove the paper lint and the like from the side scraper assembly.	Remove the photosensitive drum from the process unit.
9	Clean the separation feeding assembly. • Feeding belt		After cleaning, be sure to install the photosensitive drum.
10	Clean the fixing delivery assembly. • Guide • Separation claw (upper, lower) • Cleaning belt (check)		Solvent Solvent
11	Provide scheduled servicing to suit the number of copies made.		
12	Clean the copyboard glass.		
13	Make test copies.		Use alcohol.
14	Make sample copies.		
15	Put sample copies in order, and clean up the area around the machine.		
16	Record the final counter reading.		
17	Fill out the service sheet, and report to the person in charge.		

IV. SCHEDULED SERVICING CHART

Caution:
Do not use solvents/oils other than those specified.

A. Copier

△: Clean ●: Replace ×: Lubricate □: Adjust ◎: Check

Unit	Part	Interval					Remarks
		Installation	every 250,000	every 500,000	every 750,000	every 1,000,000	
Optical assembly	No. 1 through No. 6 mirror		△				Use a blower brush; for the No. 5 mirror, use the mirror cleaning tool.
	Dust-proofing glass		△				
	Heat absorbing glass		△				
	Standard white plate		△				
	Reflecting shade (scanning lamp)		△				
Optical drive assembly	Scanner rail		△ ×				Use alcohol; then, apply lubricant.
	Scanner cable		□ ◎				Inspect and adjust only when servicing after the first 250,000 copies.
Charging	Charging wire (primary, pre-transfer, transfer, separation)	△	●				
	Grid wire (primary)	△	△	●			
	Charging wire shield plate	△	△				
	Roller electrode waste toner receptacle (pre-transfer charging assembly)		△				
Photosensitive	Photosensitive drum		△				Use solvent.
	Primary charging anti-stray sheet		△				
Developing	Developing cylinder	◎					
	Developing assembly roll		△				
	Developing anti-stray sheet		△				

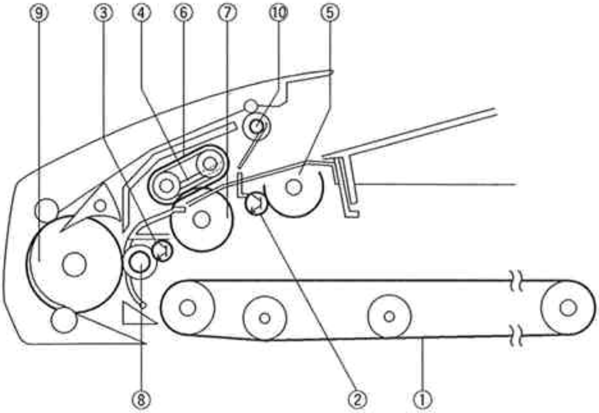
Note 1: Take care not to touch the mirrors and the lenses.

Unit	Part	Interval					Remarks
		Installation	every 250,000	every 500,000	every 750,000	every 1,000,000	
Cleaner	Blade			*		●	Apply toner. *Switch edges.
	Side scraper assembly			△			Remove paper lint.
	Separation claw		●				
Fixing assembly	Inlet guide		△				
	Fixing cleaning belt	◎					Take it up at time of installation.
	Thermistor		△				
	Oil receptacle		△				
Delivery assembly	Separation claw (upper, lower)		△	● (upper)		● (lower)	
Waste toner case	Waste toner		◎				Remove as necessary.
External control	Copyboard glass		△				
	Ozone filter		△				
	Air filter (scanner cooling fan)		△				
Pick-up assembly	Pick-up roller		●				
	Feeding roller		●				
	Separation roller		●				
Feeding assembly	Transfer guide/roll		△				
	Registration roller (upper, lower)		△				
	Feeding belt		△				
	Feeding roller		△				
Holding tray	Pick-up roller (crescent)		●				
	Upper separation belt		●				
	Lower separation feeding roller		●				
Hopper	Toner supply mouth		△				
	Toner receptacle		△				

B. RDF-H1

△ : Clean ● : Replace × : Lubricate ☐ : Adjust ◎ : Check

No.	Part	Interval		Remarks
		every 100,000	every 200,000	
1	Feeding belt	△		Actual copies mode.
2	Original sensor (S1)		△	
3	Pre-registration sensor (S2)		△	
4	Separation flapper (front, middle, rear)	△		
5	Pick-up crescent roller		△	
6	Separation belt	△		
7	Feeding roller	△		
8	Registration roller	△		
9	Reversing roller/roll	△		
10	Delivery roller/roll		△	



CHAPTER 10

TROUBLESHOOTING

This chapter provides tables of maintenance/inspection, standards/adjustments, and identification (image fault/malfunction).

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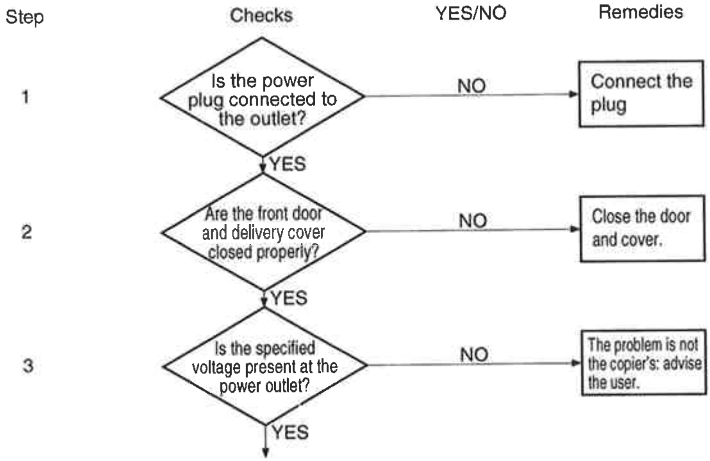
Guide to Troubleshooting Tables

The troubleshooting procedures in this manual are prepared in the form of tables, rather than flow charts. Study the following for an idea of how to consult the tables.

EX. AC power is absent.

Cause/Fault	Step	Checks	YES/NO	Remedies
Power plug	1	Is the power plug connected to the outlet?	NO	Connect the plug.
Covers	2	Are the front door and delivery cover closed properly?	NO	Close the door and cover.
Main power	3	Is the specified voltage present at the power outlet?	NO	The problem is not the copier's; advise the user.
	4	Is the specified voltage present between J1-1 and J1-2? (J1 is located near the power supply cord mount.)	YES	Go to step 6.

- To find out the cause (faulty part) of a single problem, see the Cause/Fault column. In the case of "AC power is absent," you will learn that the power plug may not be connected, the covers may not be closed properly, or the main power may be absent.
- To find out checks to make or remedies to provide for a single problem, see the Remedy column as guided by YES/NO to the checks; or, move to the next step as necessary.

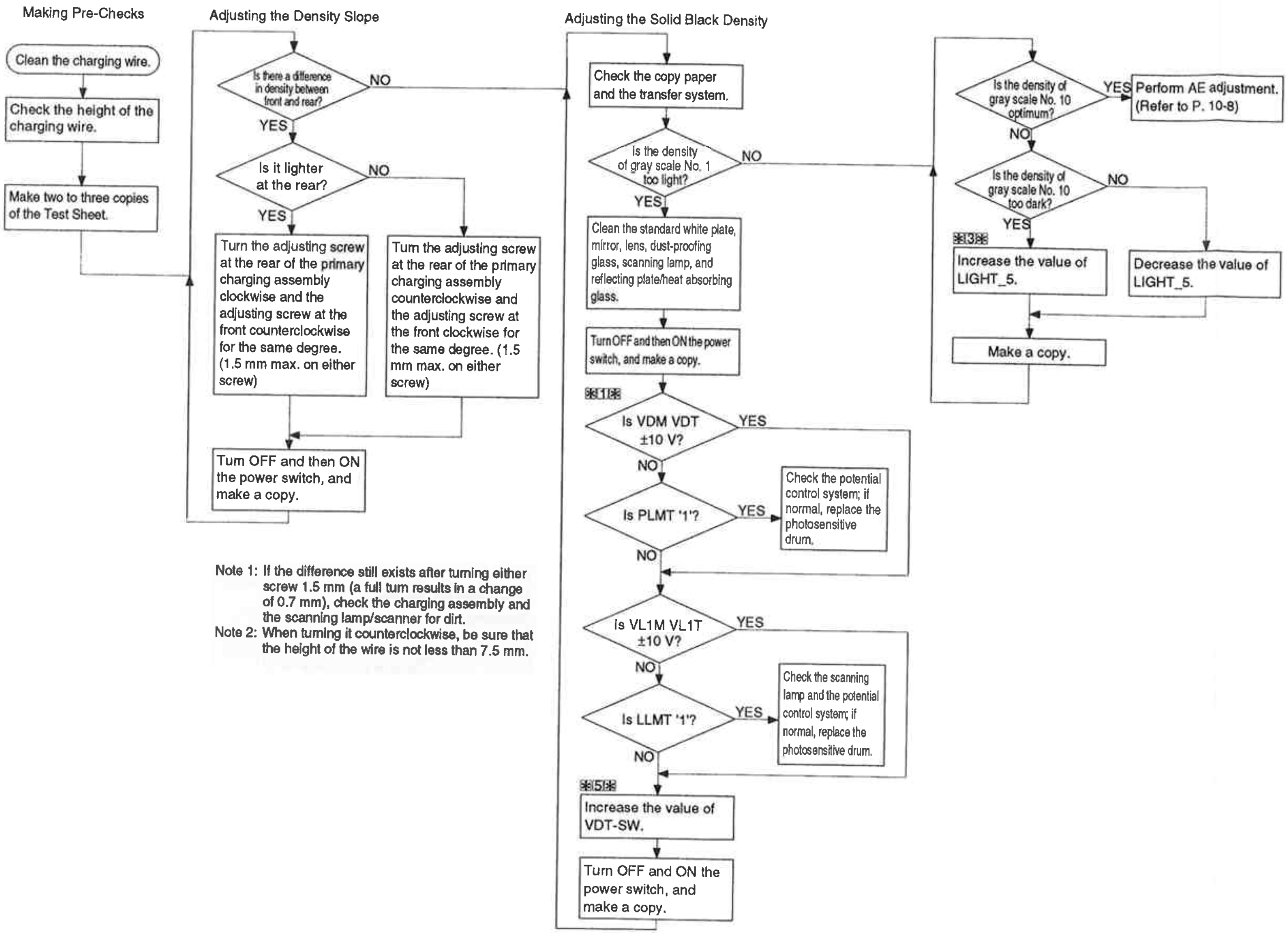

Step
Checks
YES/NO
Remedies
1
Is the power plug connected to the outlet?
NO
Connect the plug
YES
2
Are the front door and delivery cover closed properly?
NO
Close the door and cover.
YES
3
Is the specified voltage present at the power outlet?
NO
The problem is not the copier's; advise the user.
YES

- The instruction "Measure the voltage between J109-1 (+) and J109-2 (–) on the DC controller PCB" asks you to connect the meter's positive probe (+) to J109-1 and negative probe to J109-2 (–).

I. MAINTENANCE AND INSPECTION

A. Image Adjustment Basic Procedure

Make adjustments in non-AE and at copy density 5.


Making Pre-Checks
Clean the charging wire.
Check the height of the charging wire.
Make two to three copies of the Test Sheet.
Adjusting the Density Slope
Is there a difference in density between front and rear?
NO
YES
Is it lighter at the rear?
NO
YES
Turn the adjusting screw at the rear of the primary charging assembly clockwise and the adjusting screw at the front counterclockwise for the same degree. (1.5 mm max. on either screw)
Turn the adjusting screw at the rear of the primary charging assembly counterclockwise and the adjusting screw at the front clockwise for the same degree. (1.5 mm max. on either screw)
Turn OFF and then ON the power switch, and make a copy.
Adjusting the Solid Black Density
Check the copy paper and the transfer system.
Is the density of gray scale No. 1 too light?
NO
YES
Clean the standard white plate, mirror, lens, dust-proofing glass, scanning lamp, and reflecting plate/heat absorbing glass.
Turn OFF and then ON the power switch, and make a copy.
※1※
Is VDM VDT ±10 V?
YES
NO
Is PLMT '1'?
YES
Check the potential control system; if normal, replace the photosensitive drum.
NO
Is VL1M VL1T ±10 V?
YES
NO
Is LLMT '1'?
YES
Check the scanning lamp and the potential control system; if normal, replace the photosensitive drum.
NO
※5※
Increase the value of VDT-SW.
Turn OFF and ON the power switch, and make a copy.
Is the density of gray scale No. 10 optimum?
YES
Perform AE adjustment. (Refer to P. 10-8)
NO
Is the density of gray scale No. 10 too dark?
NO
YES
※3※
Increase the value of LIGHT_5.
Decrease the value of LIGHT_5.
Make a copy.

Note 1: If the difference still exists after turning either screw 1.5 mm (a full turn results in a change of 0.7 mm), check the charging assembly and the scanning lamp/scanner for dirt.

Note 2: When turning it counterclockwise, be sure that the height of the wire is not less than 7.5 mm.

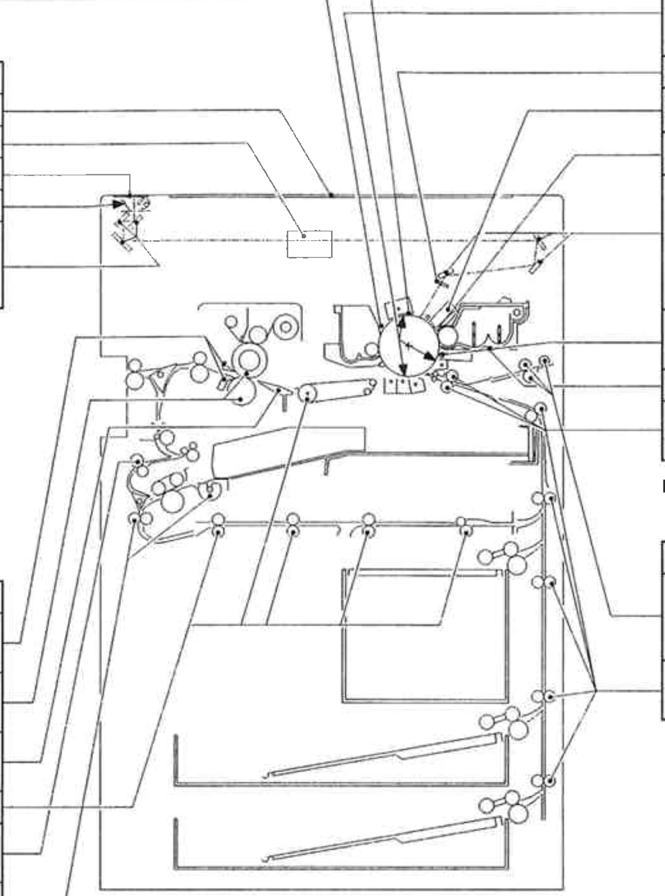
B. Points to Note for Scheduled Servicing

Note:

- **Make thorough checks to be sure that the block (front, rear) is free of melting, thermal deformation, cracking, and yellowing because of leakage. If an abnormal condition is noted, replace it with a new part without delay.**
- **Inspect and clean both outside and inside of the block (front, rear).**
- **Do NOT use a cloth coated with metal powder.**
- **Do NOT use a moist cloth. Dry wipe with lint-free paper, and use alcohol. Make sure that the part is completely dry before installing it.**
- **Be sure to complete scheduled servicing and replacement within a specific period of time.**

Part	Tool/solvent	Work/remarks
Copyboard glass	Alcohol	Cleaning
Lens	Blower brush	Cleaning
Standard white plate	Lint-free paper	Dry wiping, cleaning
Reflecting plate	Blower brush	Cleaning
No. 1 mirror through No. 3 mirror	Blower brush or lint-free paper	Cleaning with a blower brush; using lint-free paper if dirt is excessive

Part	Tool/solvent	Work/remarks
Separation claw	Solvent and lint-free paper	Cleaning
Upper roller, Lower roller	Cleaning oil and lint-free paper	Cleaning
Paper guide	Solvent and lint-free paper	Cleaning
Feeding assembly	Moist cloth (Note 1)	Cleaning
Re-pick up assembly, Reversing roller	Alcohol and lint-free paper	Cleaning
Re-pick up assembly, Pick-up roller, Registration roller	Alcohol and lint-free paper	Cleaning



Part	Tool/solvent	Work/remarks
Pre-exposure lamp		Cleaning
Primary charging anti-stray sheet		Cleaning
Primary charging assembly, Transfer/separation assembly, Pre-transfer assembly	Alcohol and lint-free paper	Dry wiping; then, cleaning with lint-fee paper moistened with alcohol
Dust-proofing glass	Lint-free paper	Cleaning
Blank exposure lamp		Cleaning
Developing anti-stray sheet		Cleaning
No. 4 mirror to No. 6 mirror	Blower brush or lint-free paper	Cleaning with a blower brush; cleaning with lint-free paper if dirt is excessive; use the mirror cleaning tool for the No. 5 mirror
Roller electrode		Disposing of the toner collecting on the roller electrode
Developing assembly base	Moist cloth (Note 1)	Cleaning
Registration roller	Alcohol and lint-free paper	Cleaning

Note: Do not leave any droplets of water.

Part	Tool/solvent	Work/remarks
Manual feed tray, Pick-up roller, Feeding roller	Alcohol and lint-free paper	Cleaning
Vertical path roller	Alcohol and lint-free paper	Cleaning

II. STANDARDS AND ADJUSTMENTS

A. Image Adjustment

1. Adjusting the Leading Edge Margin

Select 'LE_BLANK' in service mode (✱3✱).

Make adjustments so that the leading edge non-image width is 4.5±1.5 mm when the Test Sheet is copied in Direct.

(unit: 0.1 mm)

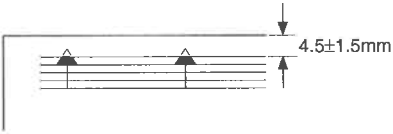


Figure 10-201

2. Adjusting the Leading Edge Non-Image Width (registration)

Select 'REGIST' in service mode (✱3✱).

Make adjustments so that the leading edge margin is 4.5±1.5 mm when the Test Sheet is copied.

(unit: REGIST:0.1mm)

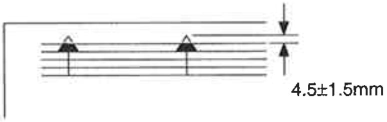


Figure 10-202

3. Adjusting the Left/Right Registration (paper deck and cassette position)

Make adjustments by moving the horizontal adjusting plate of the paper deck and each cassette so that the distance between the edge of the copy image and that of the copy paper is 0 ±1.5 mm when the Test Sheet is copied.

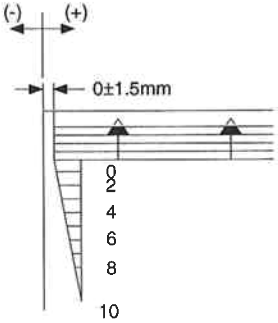


Figure 10-203

a. Paper Deck

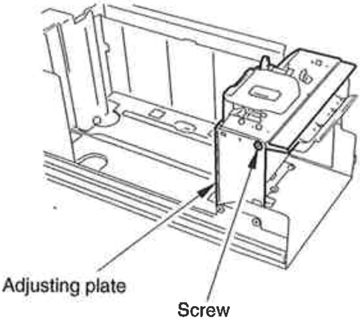

Adjusting plate
Screw

Figure 10-204a

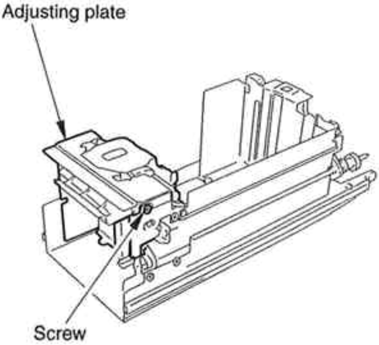

Adjusting plate
Screw

Figure 10-204b

b. Cassette

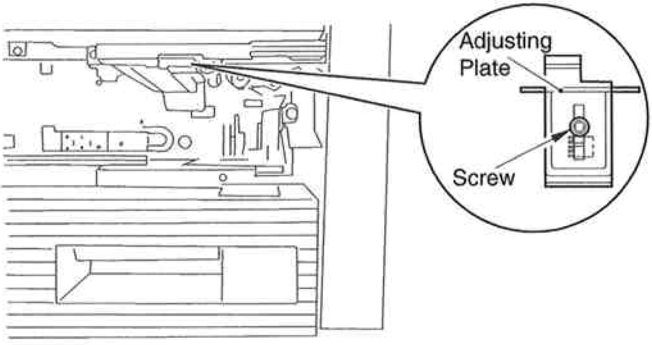


Figure 10-205

Note:
If you have adjusted the front/rear registration for the cassette, you will have to register the paper width basic value. (p. 10-53)

4. Adjusting the Left/Right Registration (holding tray position; 2nd side of a two-sided/overlay copy)

Loosen the two screws, and move the position of the guide plate of the holding tray assembly so that the distance between the edge of the copy image and that of the copy paper is 0 ±2.0 mm in Direct mode.

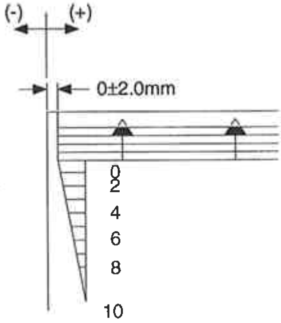


Figure 10-206

5. Adjusting the Left/Right Margin

Make adjustments so that the image left/right margin is 2.75 ±2.5 mm when the Test Sheet is copied in Direct mode.

You must have adjusted the "left/right registration" before making this adjustment.

a. Front Margin Adjustment (left margin)
Select 'F-BLANK' in service mode ($\boxed{\ast}\boxed{3}\boxed{\ast}$), and change the setting.
Increasing the setting increases the front margin.
(unit: 0.1 mm)

b. Rear Margin (right margin)
Select 'R-BLANK' in service mode ($\boxed{\ast}\boxed{3}\boxed{\ast}$), and change the setting.
Increasing the setting increases the rear margin.
(unit: 0.1 mm)

6. AE Auto Adjustment

1) Open the front door, and insert the door switch actuator into the door switch assembly.
2) Push the service mode switch with a clip or the like over the cover.
3) Select AE_ADJ: 0 ← (*: START) (0: F5, 1: F9) in service mode ($\boxed{\ast}\boxed{4}\boxed{\ast}$).
4) Place the Test Sheet on the copyboard, and close the copyboard cover.

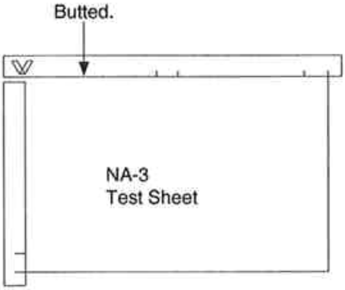


Figure 10-207

5) Press the * user mode key once.
The scanning lamp will turn ON, and auto adjustment will be executed.

AE_ADJ : 1 ← (*:START)

Changes to '1'.

6) Place a newspaper on the copyboard, and close the copyboard cover.
7) Press the ∗ user mode key once.
   The scanning lamp will turn ON, and auto adjustment will be executed.

```
AE_ADJ : 0 ← (✻:START)
         ▲
         └──Changes to '0'.
```

8) Press the Reset key twice to end service mode.

7. Adjusting the AE Slope

After executing AE auto adjustment, make a copy of a dark original (e.g., newspaper). If the copy is foggy or too light, perform the following:

1) Open the front door, and insert the door switch actuator into the door switch assembly.
2) Press the service mode switch over the cover with a clip.
3) Select 'AE_SLOP' in service mode ($\boxed{*}\boxed{3}\boxed{*}$).
4) Place a dark original (e.g., newspaper).
5) Change the setting using the keypad, and press the ✻ user mode key.
   ① If the setting was decreased in adjustment mode, the copy of a newspaper will be lighter.
   ② If the setting was increased in adjustment mode, the copy of a newspaper will be darker.

Note:
You can make copies by pressing the Copy Start key.

6) Press the Reset key twice to end service mode.

B. Exposure System

1. Adjusting the Scanner Home Position

Make copies, and remove the control panel; then, check to make sure that the line in section A on the electrode (front) of the No. 1 mirror mount is within section B of the hole in the glass support (front).

Otherwise, change the setting of 'BRAKE_SC' in service mode (✱3✱) so that the line in section Ⓐ is within section Ⓑ.

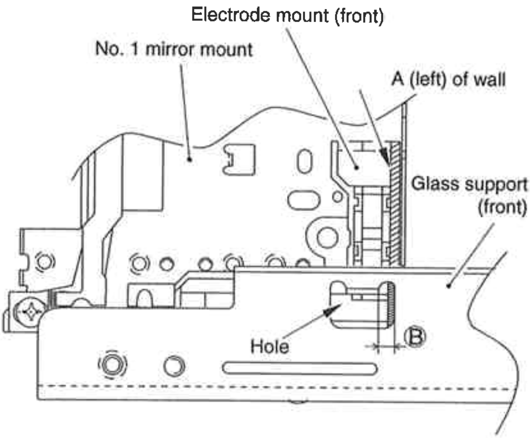

Electrode mount (front)
No. 1 mirror mount
A (left) of wall
Glass support (front)
Hole
Ⓑ

Figure 10-208

2. Routing the Scanner Drive Cable

Route the cable as indicated by numbers ① through ⑧, and perform "adjusting the wire tension" and "adjusting the mirror position" shown on the next page.

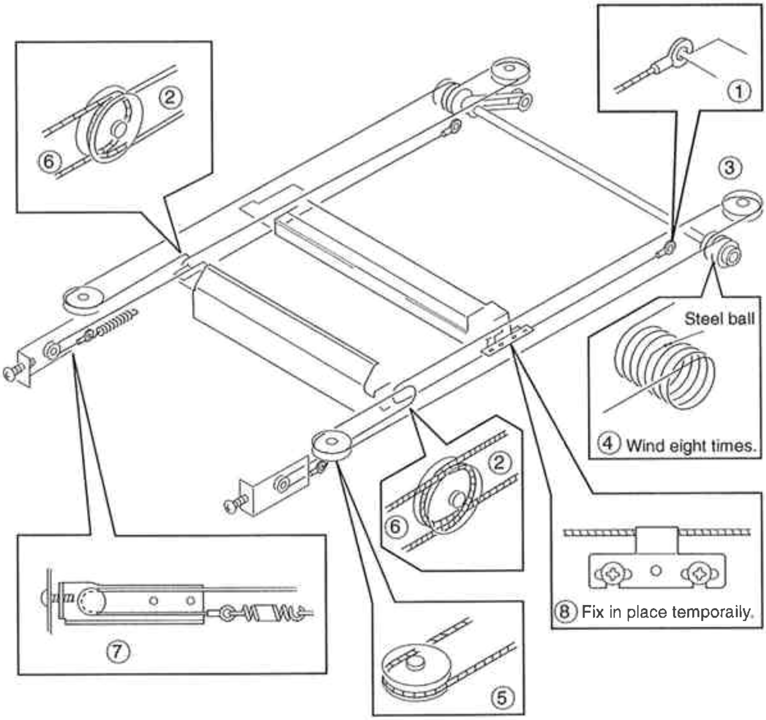

①
②
⑥
③
Steel ball
④ Wind eight times.
②
⑥
⑧ Fix in place temporaily.
⑦
⑤

Figure 10-209

3. Adjusting the Tension of the Scanner Cable

Be sure to perform the following whenever you have installed the scanner cable.

1) Remove the two mounting screws, and remove the left cover.
2) Loosen the fixing screw on the tension spring bracket.
3) Turn the tension adjusting screw so that the value is as indicated:
    - Turn the tension adjusting screw A so that the reading of the spring gauge is 200 ±50 g when the middle of the scanner cable is pulled about 10 mm.

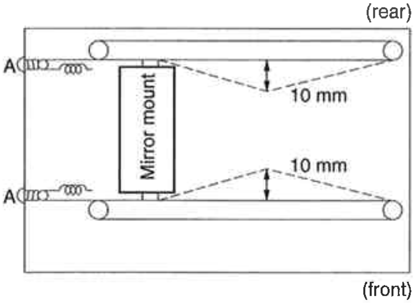


Figure 10-210

4. Adjusting the Mirror Position

1. Routing the Scanner Drive Cable and Adjusting the Mirror Position

Be sure to perform the following whenever you have installed the scanner drive wire:

1) Move the No. 1 mirror mount and the No. 2/No. 3 mirror mount to the left.
2) Set the mirror positioning tool (front, rear; FY9-3011) as shown:

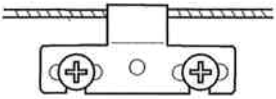


Figure 10-211

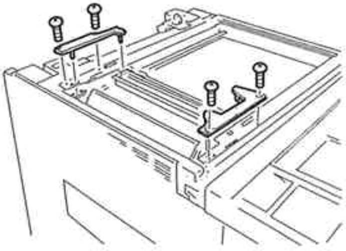


Figure 10-212

5. Cleaning the Mirror (No. 5 mirror)

1) Remove the copyboard glass.
2) Remove the lens hood.
3) Remove the mirror guide plate.
4) Move the lens stage in Enlarge direction.
5) Remove the screw, and remove the mirror cleaning tool.
6) As shown, butt the mirror cleaning tool ① against the No. 5 mirror, and clean the mirror by moving the tool in the direction of the arrows. (At this time, take care so that the No. 4 mirror will not come into contact with the cleaning tool or your fingers.)

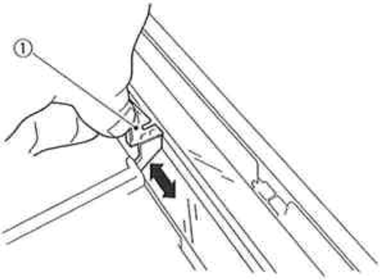
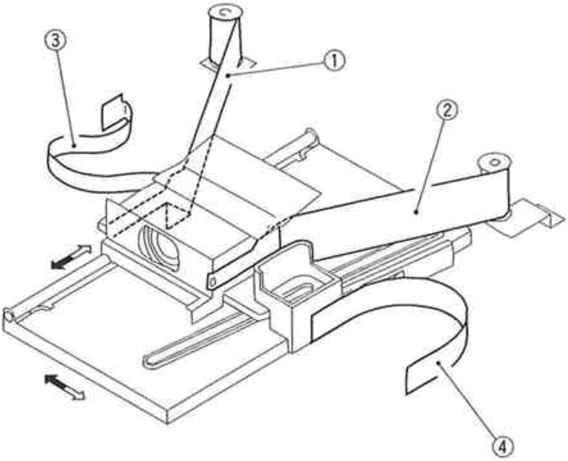


Figure 10-213

6. Installing the Light-Blocking Belts



① Light-blocking belt 1
② Light-blocking belt 2
③ Light-blocking belt 3
④ Light-blocking belt 4

Figure 10-214

7. Installing the Lens X Direction Drive Belt

Install the lens X direction drive belt with a mounting screw ② where the lens X direction drive motor ① has lowered on its own weight.

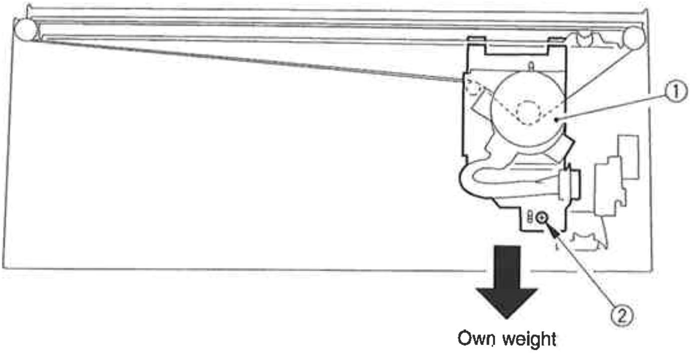


Figure 10-215

C. Image Formation System

1. Routing the Grid for the Primary Charging Assembly

1) Loosen the two mounting screws used to fix the left/right shielding plate in place.
2) Loosen the three mounting screws used to fix the motor unit in place at the front.

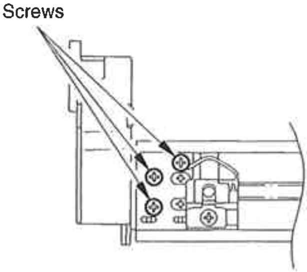


Figure 10-216

3) Loosen the mounting screw, and move it in the direction shown in Figure 10-217; then, fix it temporarily.

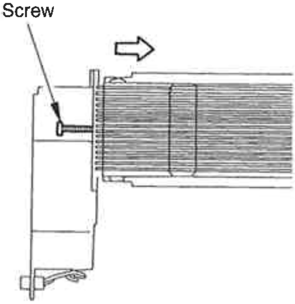


Figure 10-217

4) Free a length of about 5 cm from a 0.1mm-dia. charging wire reel, and form a loop of about 2 mm in diameter.

Reference:

When forming a loop, wind the charging wire around a hex key once, and twist the hex key three to four times; then, twist the charging wire.

5) Cut the twisted wire (excess wire) by a nipper.
6) Hook the loop on stud A shown in Figure 10-218.
7) When you have routed the wire for 31 runs, lead it through section B, give it a half turn, and put it between the washer and the motor unit; then, wind it about once (clockwise) around the mounting screw, and tighten the mounting screw.

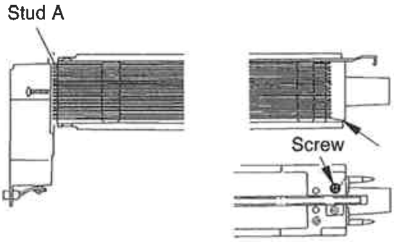


Figure 10-218

8) Cut the excess charging wire with a nipper.
9) Tighten the mounting screw you loosened in step 3).
Keep tightening the screw until the tension of the grid wire is even.
Pay attention so that the charging assembly is not deformed; try to tighten the mounting screw (front) on the left/right shielding plate as early as possible.

2. Adjusting the Height of the Charging Wire

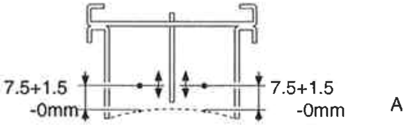
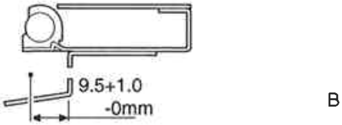
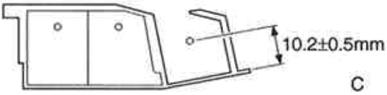
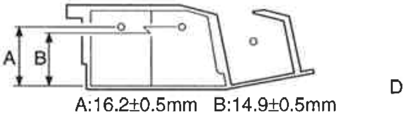
Charging assembly	Height of charging wire	Range
Primary	 7.5+1.5 -0mm 7.5+1.5 -0mm A	±1mm
Pre-transfer		No adjusting mechanism
Transfer		±2mm
Separation	 A B A:16.2±0.5mm B:14.9±0.5mm D	±2mm

Table 10-201

Reference:

The height (position) of the primary and transfer/separation charging wire may be adjusted by turning the screw behind the charging assembly. A full turn of the screw changes the position of the charging wire by about 0.7 mm.

3. Adjusting the Blank Exposure Lamp

1) Place the Test Sheet on the copyboard.
2) Select A4.
3) Make a copy, and check to make sure that the left/right registration is correct.
4) Make a copy in Direct.
5) Check the image, and measure the non-image width shown in Figure 10-219.

Paper size	Left/right non-image width
All paper sizes	2.75±2.5mm

(with standard frame erasing ON)

Table 10-202

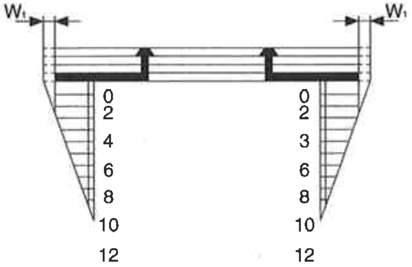


Figure 10-219

6) If the non-image width is not as specified, turn the adjusting screw to adjust the position of the blank exposure lamp assembly.

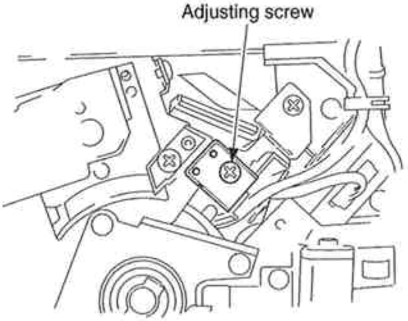


Figure 10-220

4. Position of the Roller Electrode

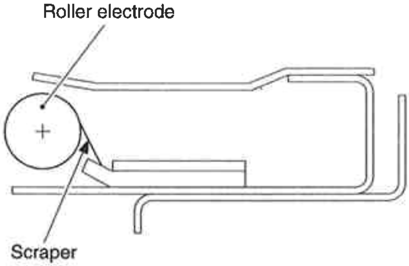
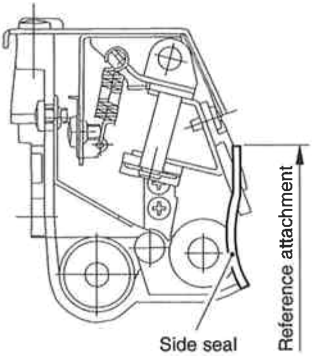


Figure 10-221

5. Position of the Side Seal in the Cleaning Assembly



Be sure that the side seal does not extend inside the cleaner housing.

Figure 10-222

6. Cleaning the Cleaner Side Scraper

Perform the following when replacing the side scraper and, thereafter, for every 500,000 copies made.

1) Remove the cleaning blade.
2) Remove paper lint collecting at the tip of the side scraper (between the magnet roller and the toner guide roller; Ⓐ) with tweezers.

3) Remove the coating of toner from the surface of the magnet roller. (Use a sheet of copy paper shaping it like the letter U.)

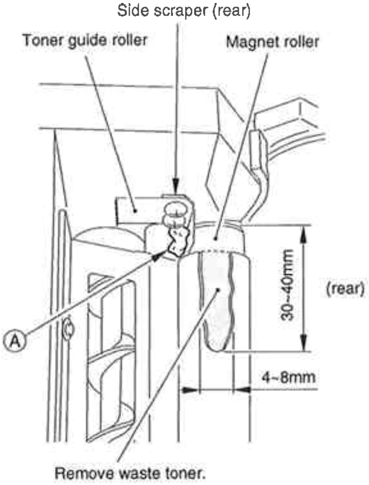

Side scraper (rear)
Toner guide roller
Magnet roller
30~40mm
(rear)
A
4~8mm
Remove waste toner.

Figure 10-223

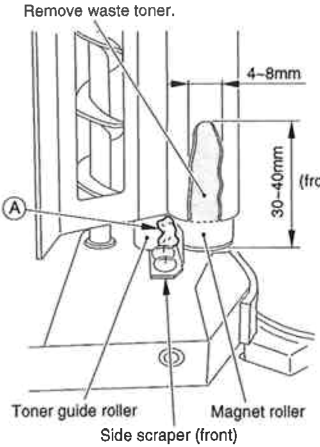

Remove waste toner.
4~8mm
30~40mm
(front)
A
Toner guide roller
Magnet roller
Side scraper (front)

Figure 10-224

4) Turn the magnet roller clockwise (viewing from the front).
5) If a coating of toner develops again where toner was removed in step 3), repeat steps 3) through 5).

D. Pick-Up/Feeding System

1. Orientation of the Pick-Up Roller (cassette/deck)

Install the pick-up roller by reversing the steps used to remove it with the following in mind:

- The front and rear pick-up rollers are not interchangeable.
- The collar of the front pick-up roller is gold.
  When installing the pick-up roller ① to the pick-up assembly, make sure that the round marking ② on the side of the roller and the round marking ③ on the collar (gold) are toward the front of the machine.

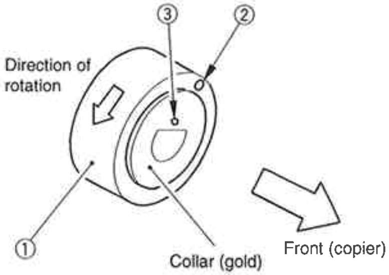

③
②
Direction of rotation
①
Collar (gold)
Front (copier)

Figure 10-225

- The collar of the rear pick-up roller is silver. When installing the pick-up roller ④ to the pick-up assembly, make sure that the round marking ⑤ on the collar (silver) is toward the rear of the machine.

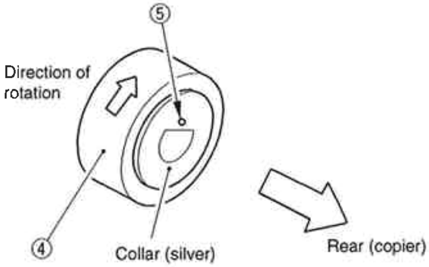

⑤
Direction of rotation
④
Collar (silver)
Rear (copier)

Figure 10-225a

2. Orientation of the Separation Roller (cassette/deck)

Keep the following in mind when replacing the separation roller.

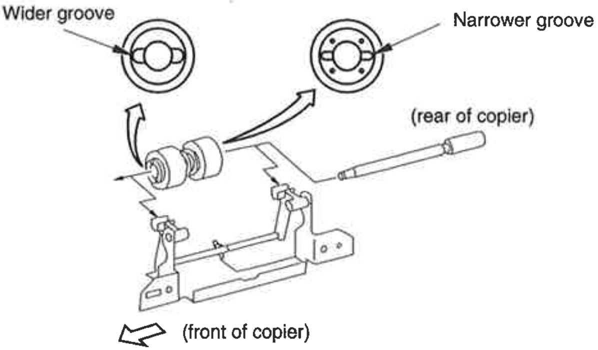

Wider groove
Narrower groove
(rear of copier)
(front of copier)

Figure 10-226

3. Orientation of the Feeding Roller (cassette/deck)

When installing the feeding roller assembly ① to the cassette/deck pick-up assembly, make sure that the belt pulley ② is toward the front of the machine.

When installing the feeding roller ③ to the feeding roller shaft ④, make sure that the marking '5' ⑤ is toward the front of the machine.

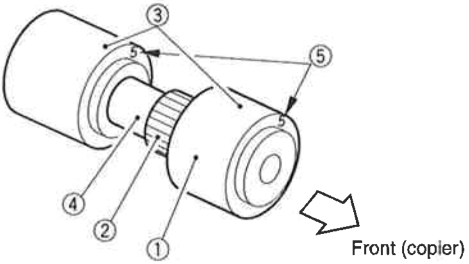
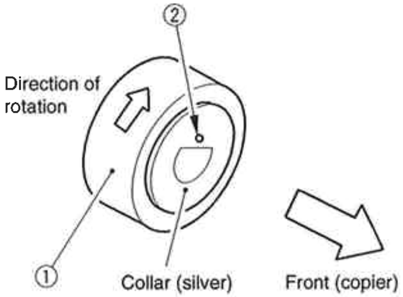

③
5
⑤
5
④
②
①
Front (copier)

Figure 10-227

4. Orientation of the Pick-Up Roller (multifeeder)

Install the pick-up roller by reversing the steps used to remove it with the following in mind:

- The front and rear pick-up rollers are not interchangeable.
- The collar of the front pick-up roller is silver.
  When installing the pick-up roller ① to the pick-up assembly, make sure that the round marking ② is toward the front of the machine.

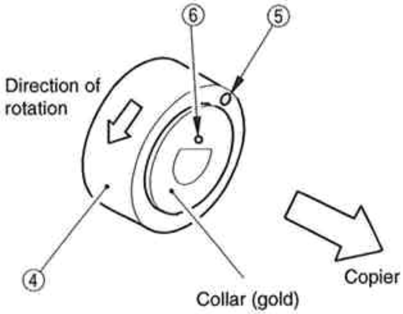

②
Direction of rotation
①
Collar (silver)
Front (copier)

① Pick-up roller
② Marking (collar)

Figure 10-228

- The collar of the rear pick-up roller is gold.

When installing the pick-up roller ③ to the pick-up assembly, make sure that the round marking ④ on the side of the roller and the round marking ⑤ on the collar (gold) are toward the rear of the machine.


⑥
⑤
Direction of rotation
④
Collar (gold)
Copier

③ Pick-up roller
④ Marking (roller)
⑤ Marking (collar)

Figure 10-228a

5. Orientation of the Feeding Roller (multifeeder)

When installing the pick-up roller ① to the multifeeder pick-up assembly, make sure that the belt pulley ② and the marking '5' ③ are toward the front of the machine.

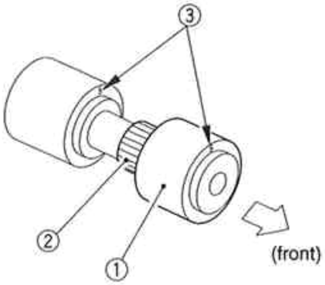
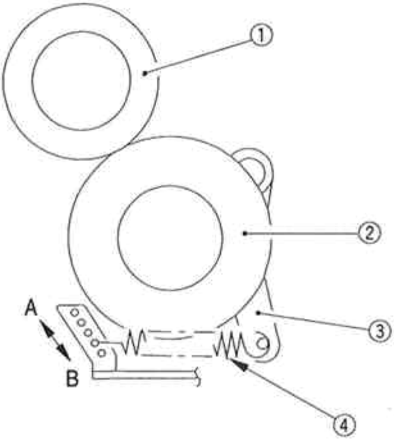


Figure 10-229

6. Adjusting the Pressure of the Separation Roller (cassette/deck)

If double feeding or pick-up failure occurs during pick-up operation, change the position of the pressure spring of the separation roller:

- If double feeding occurs, change the position of the spring hook to side B.
- If pick-up failure occurs, change the position of the spring hook to side A.



① Feeding roller ③ Locking lever
② Separation roller ④ Pressure spring

Figure 10-230

7. Adjusting the Pressure of the Separation Roller (holding tray)

Turn the separation adjusting roller so that the distance between the shafts are 32.7 ±0.1 mm.

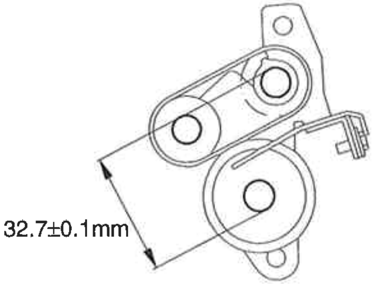


Figure 10-231

8. Adjusting the Pressure of the Pick-Up/Feeding Roller (multifeeder)

When pick-up double feeding or pick-up failure occurs during pick-up operation, adjust the position of the pressure spring of the separation roller.

- If double feeding occurs, change the position of the spring hook to side A.
- If pick-up failure occurs, change the position of the spring hook to side B.

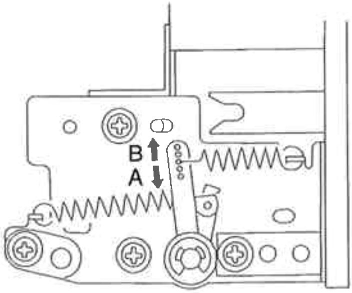


Figure 10-232

9. Positioning the Pick-Up Roller Releasing Solenoid (cassette)

Make adjustments so that the distance from the bottom of the pick-up unit in each cassette holder to the bottom end of the bushing of the roller support A is 36 ±0.5 mm when the plunger of the pick-up releasing roller is drawn as shown.

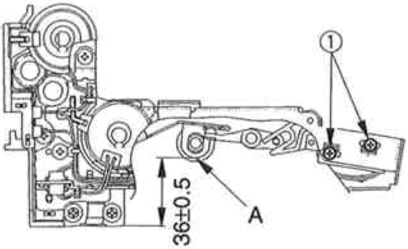


Figure 10-233

10. Adjusting the Position of the Pick-Up Roller Releasing Solenoid (deck)

Adjust the position of the solenoid so that the distance from the center of the hole A in the solenoid to the left end of the right solenoid arm is 57.2 ±0.5 mm as shown in Figure 10-234.

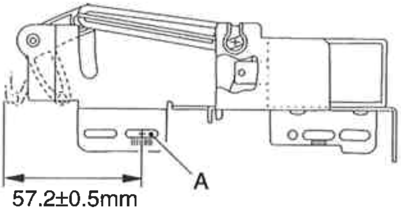


Figure 10-234

11. Adjusting the Pick-Up Roller Releasing Solenoid (multifeeder)

Make adjustments by sliding the solenoid in the direction of A so that the distance between the shutter ① and the shutter plate ② is 0.4 ±0.2 mm when the solenoid is pulled.

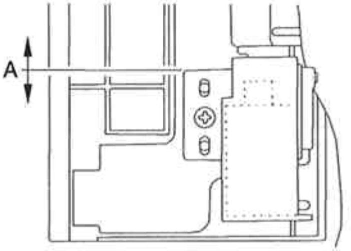


Figure 10-235

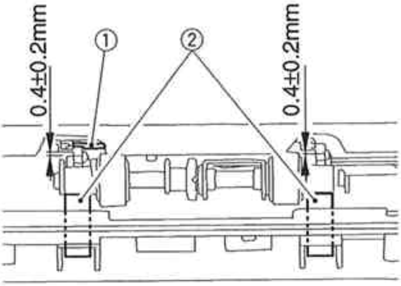

0.4±0.2mm
①
②
0.4±0.2mm

Figure 10-235a

12. Routing the Timing Belt for the Multifeeder Assembly Side Guide

Butt the rack plate of the multifeeder against section A (open state).

Move the slide volume in the direction of B, and install the timing belt to the pulley.

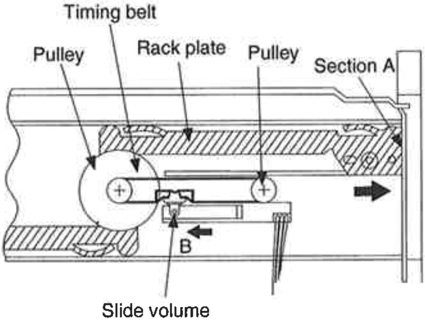

Timing belt
Pulley
Rack plate
Pulley
Section A
B
Slide volume

Figure 10-236

13. Adjusting the Position of the Delivery Paper Deflecting Drive Solenoid

Temporarily fix the delivery paper deflecting plate drive solenoid with a screw; then, push down the lever ① in the direction of A to push in the delivery paper deflecting plate drive solenoid ② in the direction of B, and tighten the mounting screw ③.

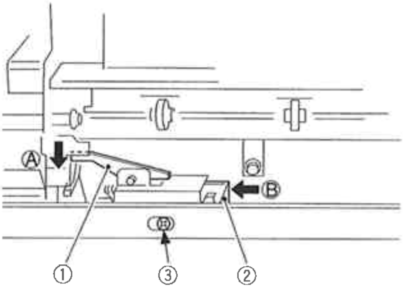


Figure 10-237

14. Adjusting the Position of the Holding Tray Paper Deflecting Plate Drive Solenoid

Install the solenoid so that its stroke is 5.6 ±0.3 mm, i.e., between the rubber silencer and the end of the solenoid.

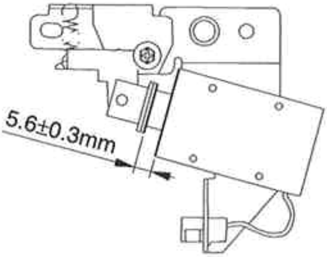


Figure 10-238

15. Installing the Holding Tray Assembly Side Guide Assembly

Mark the position of the side guide plate assembly with a scriber for installation later.

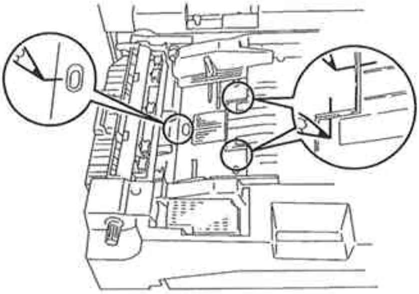


Figure 10-239

16. Installing the Holding Tray Paper Jogging Guide Assembly

Mark the position of the paper jogging guide assembly with a scriber for installation later.

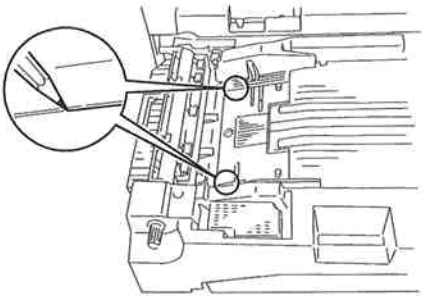


Figure 10-240

17. Installing the Timing Belt for the Holding Tray Assembly Paper Jogging Guide Plate

Butt the rack plate of the paper jogging guide plate against section A (open state). Install the timing belt on the pulley.

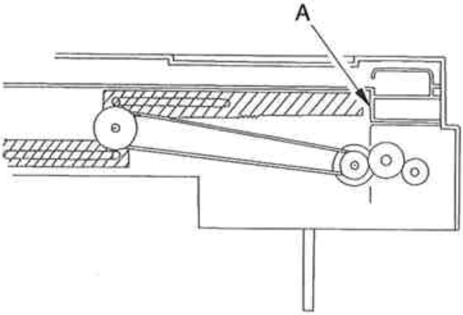


Figure 10-241

18. Adjusting the Position of the Holding Tray Paper Jogging Solenoid

Install the solenoid so that the stroke is 1.5 ±0.3 mm, i.e., between the rubber silencer and the end of the solenoid.

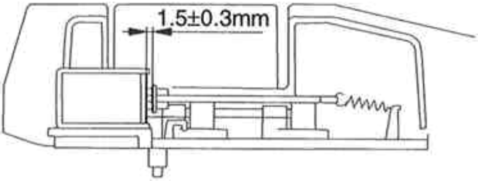


Figure 10-242

19. Installing the Drive Belt

Install the drive belt on the gears and rollers as follows:

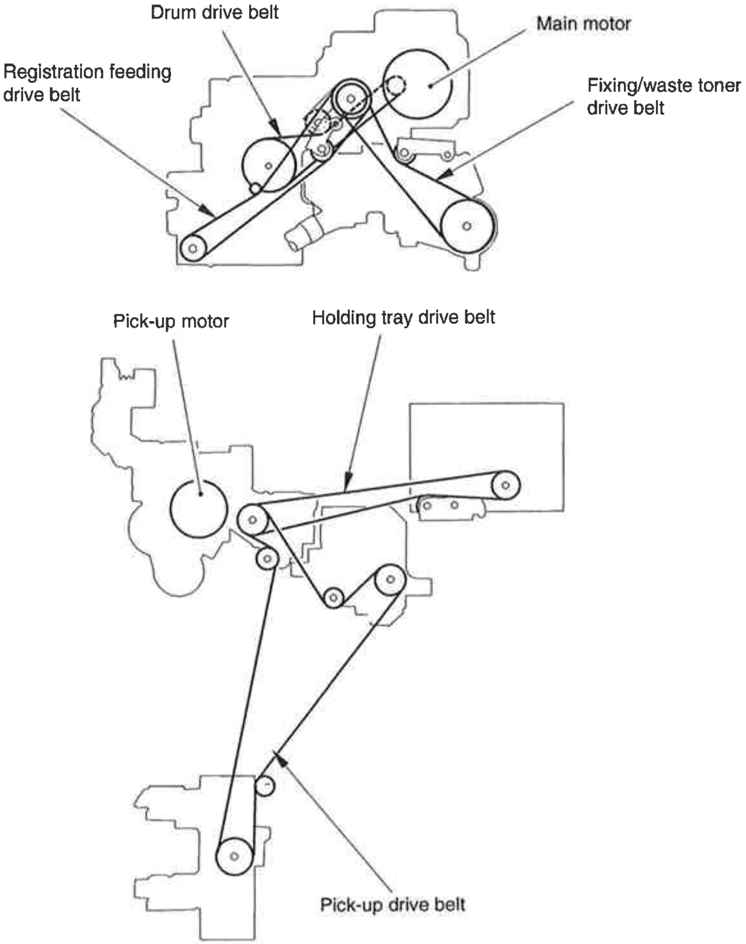

Drum drive belt
Main motor
Registration feeding drive belt
Fixing/waste toner drive belt
Pick-up motor
Holding tray drive belt
Pick-up drive belt

Figure 10-243

Caution:
When attaching the holding tray drive belt, attach it on the pulley so that it is toward the front (inside when viewed from the rear) while the pick-up drive belt is toward the rear (outside when viewed from the rear).

E. Fixing System

1. Points to Note When Handling the Fixing Heater

a. Do not touch the heater surface.

b. Install both heaters so that the side with the longer heater wire is toward the front.

c. In the case of the 120V model, install the main heater (790 W) on the right and the sub heater (410 W) on the left when viewing from the front of the fixing assembly.
In the case of the 220/240V model, install the main heater (1200 W) on the right side.

d. Use the faston on the right for the main heater and that at the top for the sub heater for heater connection at the rear.

2. Position of the Fixing Assembly Paper Guide

Keep the following in mind when working in the field:

a. See Figure 10-244 for the position of the guide.

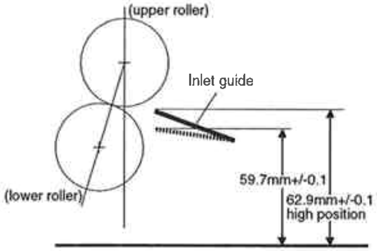
b. The height of the lower guide is when the solenoid (SL16) is ON.

c. Make sure that the difference in height of the guide between front and rear is 0.5 mm or less.

d. To adjust the height of the guide, loosen the fixing screw on the height adjusting support plate.

e. Make checks by removing the lower roller.

Height of the Fixing Inlet Guide
(dimensions refer to the center of the guide)



Difference in Height between Front and Rear

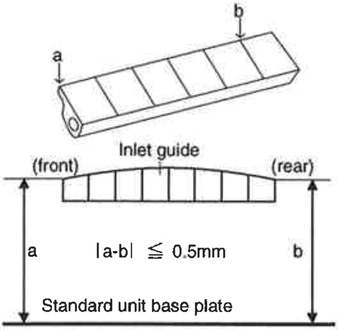


Figure 10-244

Caution:
Do not loosen the mounting screw on the paper guide mount; otherwise, the paper guide position must be adjusted. If you have loosened it for some reason, make sure that the original position is maintained with reference to the notches provided on the fixing assembly.

3. Adjusting the Pressure of the Lower Roller (nip)

The nip width must be as indicated in Table 10-203. Otherwise, make adjustments by turning the pressure adjusting nut.

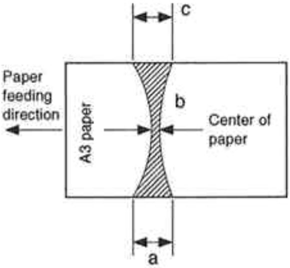


Figure 10-245

Note:
a and c represent points 10 mm from either side.

Dimension	Measured when both upper and lower rollers have been heated sufficiently.
b	7.3±0.5mm
la-cl	0.5mm or less

Table 10-203

a. Measuring the Nip
Wait for 15 min after the copier has completed its warm-up period, make 20 A4 copies, and measure the nip.

1) Select A3.
2) Open the copyboard cover.
3) Select 'NIP' in service mode (⊛④⊛).
4) Press the ✻ user mode key.
The copier will pick up A3 copy paper and become ready for measurement as shown in Figure 10-245.

Reference:
The paper will stop between fixing rollers halfway and then will be delivered automatically after about 20 sec.

5) Measure the nip.

4. Adjusting the Fixing Clutch

If you have replaced any of the component parts shown below, adjust the gap between the 41T gear ① and the control ring ② so that it is 0.1 to 0.3 mm (equivalent of four sheets of 64 g/m² plain paper) with a set screw ③.

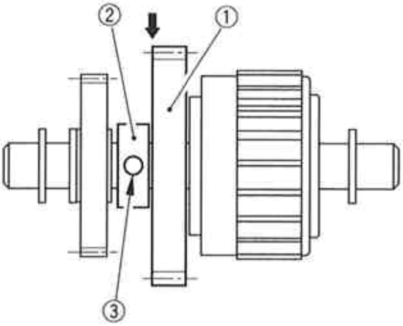


Figure 10-246

F. Electrical System

1. When Replacing the DC Controller PCB

1) Install a new DC controller PCB.
2) Press the service mode switch over the cover with a clip.
3) Select RAM_INIT:0 ← (✻: START) in service mode ($\boxed{*}\boxed{4}\boxed{*}$).
4) Press the ✻ user mode key.
5) Execute AE adjustment.
6) Enter the values recorded on the label attached behind the front door.
7) Enter the appropriate settings for the user in service mode ($\boxed{*}\boxed{5}\boxed{*}$).
8) Press the Reset key twice.

2. Checking the Surface Potential Control System

a. Outline

If image faults are noted, you must first find out whether the problem is in the latent image formation block including the photosensitive drum and the potential control system or it is in the developing/transfer mechanism.

To do so, it is important to check to see whether the surface potential is optimum.

You can check the surface potential in service mode.

b. Disabling the Auto Control Mechanism

You may disable the auto control mechanism as a way to find out whether the corona current control, lamp intensity control, or developing bias control mechanism is faulty (non-auto control mode).

You may also use non-auto control mode as a tentative remedy for a fault in the auto control mechanism. In non-auto control mode, all outputs are fixed to their appropriate values.

① Steps

1) Select 'PO_CONT' in service mode ($\boxed{*}\boxed{4}\boxed{*}$).
2) Check to make sure that the indication on the message display is as follows:

```
          NIP : 0 ← (✻ : START)
      PO_CONT : 0 ← (✻ : START)
```

Changes to '1'.

3) Press the ✻ user mode key. (non-auto control mode selected)

```
          NIP : 0 ← (✻ : START)
      PO_CONT : 1 ← (✻ : START)
```

4) Press the Reset key twice.

Caution:
In non-auto control mode, all values for corona current control, lamp intensity control, and developing bias control are set to their respective default values.

② Using Non-Auto Control Mode

When image faults are noted, you may use non-auto control mode to find out weather the cause is on the input side or the output side of the microprocessor on the DC controller PCB.

If the images are corrected in non-auto control mode, the cause is on the input side, i.e., potential measuring unit or the DC controller PCB.

c. Zero-Level Check

You may make use of a zero-level check to decide whether the surface potential control circuit is normal or faulty.

Reference:
The term zero-level check refers to a check made to find out if the microprocessor recognizes 0 V when the drum surface potential is 0 V.

This way, you can decide whether the microprocessor on the DC controller PCB is normal or faulty.

There are two types of zero-level checks: in method 1, the level shift circuit of the DC controller PCB is checked and in method 2, the potential measurement circuit:

① Method 1

1) Turn OFF the power switch.
2) Short J127-1 and -2 on the DC controller PBC. Disconnect J103.
3) Insert the door switch actuator into the door switch assembly, and turn ON the power switch.
4) Start service mode (⊠2⊠), and check if the indication of address PC023 (hexadecimal analog value) is between '0003' and '001B' during initial rotation.

If it is not between '003' and '001B', the DC controller PCB may be faulty.

5) Turn OFF the power switch, and remove the door switch actuator.
6) Remove the jumper wire from the DC controller PCB.
7) Connect the connector to J103 on the DC controller PCB.
8) Turn ON the power switch.

② Method 2

1) Turn OFF the power switch.
2) Remove the blank exposure lamp assembly.
3) Connect the connector of the potential sensor.
4) Attach the potential sensor check electrode (FY9-3012) to the potential sensor.

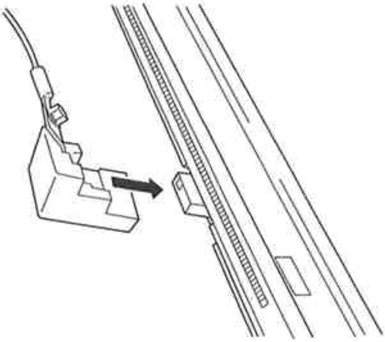


Figure 10-247

Caution:
When attaching the check electrode to the potential sensor, take care so that its magnet will not come into contact with the potential sensor cover.

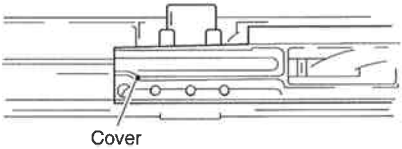


Figure 10-248

Caution:
Be sure to keep the clip far away from the sensor window so that it will never come into contact with the sensor cover.

5) Connect the cable for the potential sensor check electrode to J-1 on the potential measurement PCB.
6) Insert the door switch actuator into the door switch assembly.
7) Turn ON the power switch.

Caution:
Do not touch the potential sensor assembly once you have turned ON the power switch.

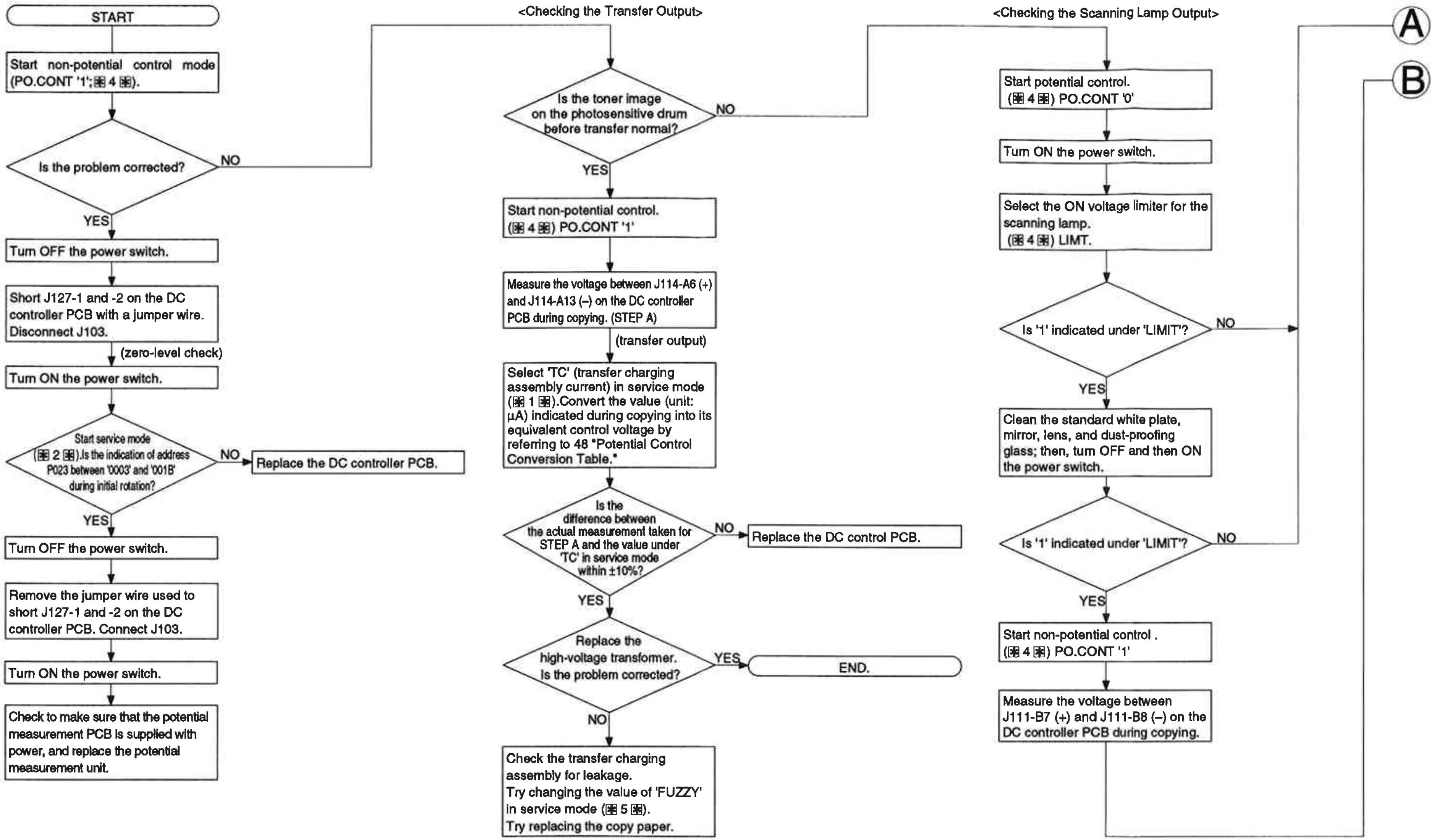
8) Start service mode ($\boxed{*}\boxed{2}\boxed{*}$), and check to make sure that the indication of address P023 (hexadecimal analog value) is between '0003' and '0001B' during initial rotation.

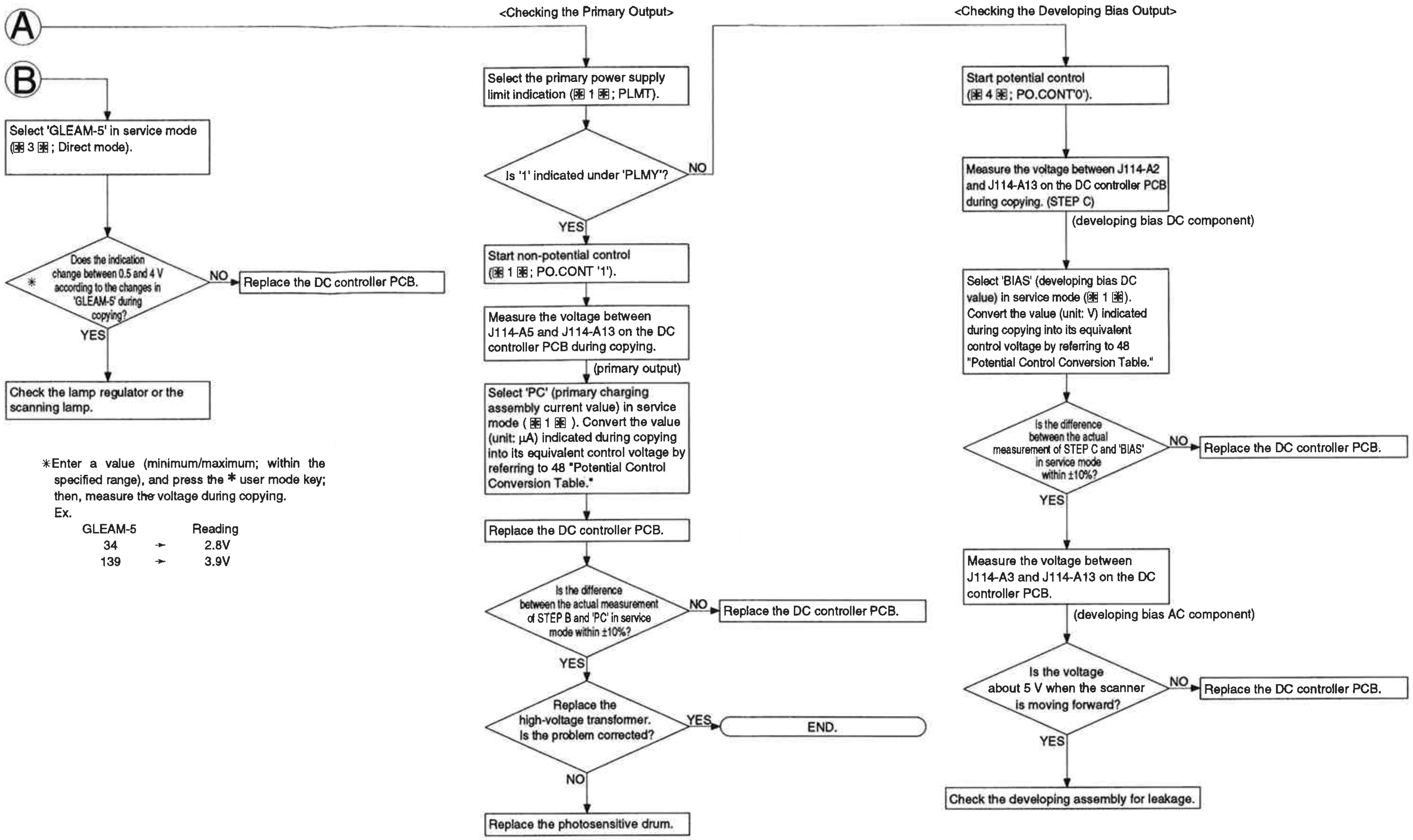
Reference:

1. If the value is within the range in method 1 but not in method 2, the sensor may be soiled or the potential measuring unit may be faulty.
2. If the value is within the range in both method 1 and method 2, the operations throughout the signal paths from the potential sensor unit to the microprocessor on the DC controller PCB are likely to be normal.

9) Turn OFF the power switch.
10) Remove the potential sensor check electrode.
11) Install the blank exposure lamp assembly.
12) Turn ON the power switch.

3. Checking the Potential Control System


START
Start non-potential control mode (PO.CONT '1';⊞ 4 ⊞).
Is the problem corrected?
NO
YES
Turn OFF the power switch.
Short J127-1 and -2 on the DC controller PCB with a jumper wire. Disconnect J103.
(zero-level check)
Turn ON the power switch.
Start service mode (⊞ 2 ⊞).Is the indication of address P023 between '0003' and '001B' during initial rotation?
NO
Replace the DC controller PCB.
YES
Turn OFF the power switch.
Remove the jumper wire used to short J127-1 and -2 on the DC controller PCB. Connect J103.
Turn ON the power switch.
Check to make sure that the potential measurement PCB is supplied with power, and replace the potential measurement unit.
<Checking the Transfer Output>
Is the toner image on the photosensitive drum before transfer normal?
NO
YES
Start non-potential control. (⊞ 4 ⊞) PO.CONT '1'
Measure the voltage between J114-A6 (+) and J114-A13 (–) on the DC controller PCB during copying. (STEP A)
(transfer output)
Select 'TC' (transfer charging assembly current) in service mode (⊞ 1 ⊞).Convert the value (unit: μA) indicated during copying into its equivalent control voltage by referring to 48 "Potential Control Conversion Table."
Is the difference between the actual measurement taken for STEP A and the value under 'TC' in service mode within ±10%?
NO
Replace the DC control PCB.
YES
Replace the high-voltage transformer. Is the problem corrected?
YES
END.
NO
Check the transfer charging assembly for leakage. Try changing the value of 'FUZZY' in service mode (⊞ 5 ⊞). Try replacing the copy paper.
<Checking the Scanning Lamp Output>
Start potential control. (⊞ 4 ⊞) PO.CONT '0'
Turn ON the power switch.
Select the ON voltage limiter for the scanning lamp. (⊞ 4 ⊞) LIMT.
Is '1' indicated under 'LIMIT'?
NO
YES
Clean the standard white plate, mirror, lens, and dust-proofing glass; then, turn OFF and then ON the power switch.
Is '1' indicated under 'LIMIT'?
NO
YES
Start non-potential control . (⊞ 4 ⊞) PO.CONT '1'
Measure the voltage between J111-B7 (+) and J111-B8 (–) on the DC controller PCB during copying.
Ⓐ
Ⓑ


A
B
<Checking the Primary Output>
<Checking the Developing Bias Output>
Select 'GLEAM-5' in service mode (⊞ 3 ⊞ ; Direct mode).
* Does the indication change between 0.5 and 4 V according to the changes in 'GLEAM-5' during copying?
NO
Replace the DC controller PCB.
YES
Check the lamp regulator or the scanning lamp.
Select the primary power supply limit indication (⊞ 1 ⊞ ; PLMT).
Is '1' indicated under 'PLMY'?
NO
YES
Start non-potential control (⊞ 1 ⊞ ; PO.CONT '1').
Measure the voltage between J114-A5 and J114-A13 on the DC controller PCB during copying.
(primary output)
Select 'PC' (primary charging assembly current value) in service mode (⊞ 1 ⊞). Convert the value (unit: µA) indicated during copying into its equivalent control voltage by referring to 48 "Potential Control Conversion Table."
Replace the DC controller PCB.
Is the difference between the actual measurement of STEP B and 'PC' in service mode within ±10%?
NO
Replace the DC controller PCB.
YES
Replace the high-voltage transformer. Is the problem corrected?
YES
END.
NO
Replace the photosensitive drum.
Start potential control (⊞ 4 ⊞ ; PO.CONT'0').
Measure the voltage between J114-A2 and J114-A13 on the DC controller PCB during copying. (STEP C)
(developing bias DC component)
Select 'BIAS' (developing bias DC value) in service mode (⊞ 1 ⊞). Convert the value (unit: V) indicated during copying into its equivalent control voltage by referring to 48 "Potential Control Conversion Table."
Is the difference between the actual measurement of STEP C and 'BIAS' in service mode within ±10%?
NO
Replace the DC controller PCB.
YES
Measure the voltage between J114-A3 and J114-A13 on the DC controller PCB.
(developing bias AC component)
Is the voltage about 5 V when the scanner is moving forward?
NO
Replace the DC controller PCB.
YES
Check the developing assembly for leakage.

*Enter a value (minimum/maximum; within the specified range), and press the * user mode key; then, measure the voltage during copying.

Ex.

GLEAM-5		Reading
34	→	2.8V
139	→	3.9V

4. Potential Control System Conversion Table

Control (V)	Primary (μA)	Developing bias (V)	Pre-transfer (μA)	Transfer (μA)	Separation (μA)
3.00	1,400	0	0	440	100
3.05	1,391	3	-2	437	96
3.10	1,382	7	-4	434	92
3.15	1,373	11	-6	431	88
3.20	1,365	15	-8	429	85
3.25	1,356	18	-10	426	81
3.30	1,347	22	-12	423	77
3.35	1,338	26	-14	420	73
3.40	1,330	30	-16	418	70
3.45	1,321	33	-18	415	66
3.50	1,312	37	-20	412	62
3.55	1,303	41	-22	409	58
3.60	1,295	45	-24	407	55
3.65	1,286	48	-26	404	51
3.70	1,277	52	-28	401	47
3.75	1,268	56	-30	398	43
3.80	1,260	60	-33	396	40
3.85	1,251	63	-35	393	36
3.90	1,242	67	-37	390	32
3.95	1,233	71	-39	387	28
4.00	1,225	75	-41	385	25
4.05	1,216	78	-43	382	21
4.10	1,207	82	-45	379	17
4.15	1,198	86	-47	376	13
4.20	1,190	90	-49	374	10
4.25	1,181	93	-51	371	6
4.30	1,172	97	-53	368	2
4.35	1,163	101	-55	365	-1
4.40	1,155	105	-57	363	-5
4.45	1,146	108	-59	360	-8
4.50	1,137	112	-61	357	-12
4.55	1,128	116	-63	354	-16
4.60	1,120	120	-66	352	-20

Control (V)	Primary (µA)	Developing bias (V)	Pre-transfer (µA)	Transfer (µA)	Separation (µA)
4.65	1,111	123	-68	349	-23
4.70	1,102	127	-70	346	-27
4.75	1,093	131	-72	343	-31
4.80	1,085	135	-74	341	-35
4.85	1,076	138	-76	338	-38
4.90	1,067	142	-78	335	-42
4.95	1,058	146	-80	332	-46
5.00	1,050	150	-82	330	-50
5.05	1,041	153	-84	327	-53
5.10	1,032	157	-86	324	-57
5.15	1,023	161	-88	321	-61
5.20	1,015	165	-90	319	-65
5.25	1,006	168	-92	316	-68
5.30	997	172	-94	313	-72
5.35	938	176	-96	310	-76
5.40	980	180	-99	308	-80
5.45	971	183	-101	305	-83
5.50	962	187	-103	302	-87
5.55	953	191	-105	299	-91
5.60	945	195	-107	297	-95
5.65	936	198	-109	294	-98
5.70	927	202	-111	291	-102
5.75	918	206	-113	288	-106
5.80	910	210	-115	286	-110
5.85	901	213	-117	283	-113
5.90	892	217	-119	280	-117
5.95	883	221	-121	277	-121
6.00	875	225	-123	275	-125
6.05	866	228	-125	272	-128
6.10	857	232	-127	269	-132
6.15	848	236	-129	266	-136
6.20	840	240	-132	264	-140
6.25	831	243	-134	261	-143
6.30	822	247	-136	258	-147

Control (V)	Primary (μA)	Developing bias (V)	Pre-transfer (μA)	Transfer (μA)	Separation (μA)
6.35	813	251	-138	255	-151
6.40	805	255	-140	253	-155
6.45	796	258	-142	250	-158
6.50	787	262	-144	247	-162
6.55	778	266	-146	244	-166
6.60	770	270	-148	242	-170
6.65	761	273	-150	239	-173
6.70	752	277	-152	236	-177
6.75	743	281	-154	233	-181
6.80	735	285	-156	231	-185
6.85	726	288	-158	228	-188
6.90	717	292	-160	225	-192
6.95	708	296	-162	222	-196
7.00	700	300	-165	220	-200
7.05	691	303	-167	217	-203
7.10	682	307	-169	214	-207
7.15	673	311	-171	211	-211
7.20	665	315	-173	209	-215
7.25	656	318	-175	206	-218
7.30	647	322	-177	203	-222
7.35	638	326	-179	200	-226
7.40	630	330	181	198	-230
7.45	621	333	-183	195	-233
7.50	612	337	-185	192	-237
7.55	603	341	-187	189	-240
7.60	595	345	-189	187	-245
7.65	586	348	-191	184	-248
7.70	577	352	-193	181	-252
7.75	568	356	-195	178	-256
7.80	560	360	-198	176	-260
7.85	551	363	-200	173	-263
7.90	542	367	-202	170	-267
7.95	533	371	-204	167	-271
8.00	525	375	-206	165	-275

Control (V)	Primary (μA)	Developing bias (V)	Pre-transfer (μA)	Transfer (μA)	Separation (μA)
8.05	516	378	-208	162	-278
8.10	507	382	-210	159	-282
8.15	498	386	-212	156	-286
8.20	490	390	-214	154	-290
8.25	481	393	-216	151	-293
8.30	472	397	-218	148	-297
8.35	463	401	-220	145	-301
8.40	455	405	-222	143	-305
8.45	446	408	-224	140	-308
8.50	437	412	-226	137	-312
8.55	428	416	-228	134	-316
8.60	420	420	-231	132	-320
8.65	411	423	-233	129	-323
8.70	402	427	-235	126	-327
8.75	393	431	-237	123	-331
8.80	385	435	-239	121	-335
8.85	376	438	-2341	118	-338
8.90	367	442	-243	115	-342
8.95	358	446	-245	112	-346
9.00	350	450	-247	110	-350
9.05	341	453	-249	107	-353
9.10	332	457	-251	104	-357
9.15	323	461	-253	101	-361
9.20	315	465	-255	99	-365
9.25	306	468	-257	96	-368
9.30	297	472	-259	93	-372
9.35	288	476	-261	90	-376
9.40	280	480	-264	88	-380
9.45	271	483	-266	85	-383
9.50	262	487	-268	82	-387
9.55	253	491	-270	79	-391
9.60	245	495	-272	77	-395
9.65	236	498	-274	74	-398
9.70	227	502	-276	71	-402

Control (V)	Primary (µA)	Developing bias (V)	Pre-transfer (µA)	Transfer (µA)	Separation (µA)
9.75	218	506	-278	68	-406
9.80	210	510	-280	66	-410
9.85	201	513	-282	63	-413
9.90	192	517	-284	60	-417
9.95	183	521	-286	57	-421
10.00	175	525	-288	55	-425
10.05	166	528	-290	52	-428
10.10	157	532	-292	49	-432
10.15	148	536	-294	46	-436
10.20	140	540	-97	44	-440
10.25	131	543	-299	41	-443
10.30	122	547	-301	38	-447
10.35	113	551	-303	35	-451
10.40	105	555	-305	33	-455
10.45	96	558	-307	30	-458
10.50	87	562	-309	27	-462
10.55	78	566	-311	24	-466
10.60	70	570	-313	22	-470
10.65	61	573	-315	19	-473
10.70	52	577	-317	16	-477
10.75	43	581	-319	13	-481
10.80	35	585	-321	11	-485
10.85	26	588	-323	8	-488
10.90	17	592	-325	5	-492
10.95	8	596	327	2	-496
11.00	0	600	-330	0	-500

5. Checking the Environment Sensor

1) Start service mode ($\boxed{\ast}\boxed{1}\boxed{\ast}$), and check the temperature/humidity on the control panel display; then, record the values.
   Data A
   'RTMP' °C ......Data A1
   'RHUM' % ......Data A2
2) Press the Reset key twice, and turn OFF the power switch.
3) Remove the environment sensor, and insert the environment sensor tool (FY9-3014) in its place.
4) Turn ON the power switch, and leave the machine alone for 5 min.
5) Start service mode ($\boxed{\ast}\boxed{1}\boxed{\ast}$), and check the temperature/humidity on the control panel display; record the values.
   Data B
   'RTMP' °C ......Data B1
   'RHUM' % ......Data B2
6) Compare data A and data B.
   - difference between data A1 and data B1 is 0 ±5
   - difference between data A2 and data B2 is 0 ±20

   If the difference between data A and data B is outside the specification, replace the environment sensor.
7) Press the Reset key twice, and turn OFF the power switch.
8) Remove the environment sensor tool, and install the environment sensor.
9) Install all covers.

Caution:
The environment sensor tool (FY9-3014) is adjusted at the factory to high precision; keep it in an airtight case with a drying agent.

6. Checking the Photointerrupters

The copier's photointerrupters may be checked either using a conventional meter or service mode.

a. Using a Meter

1) Set the tester's range to 30VDC.
2) Connect the tester's - probe to GND on the DC controller PCB.
3) Connect the tester's + probe to the terminal (DC controller PCB) shown.
4) Make a check as instructed.

b. Using Service Mode

1) Open the front door, and insert the door switch actuator into the door switch assembly.
2) Press the service switch with a clip over the cover.
3) Press $\boxed{\ast}$, $\boxed{2}$, and $\boxed{\ast}$ in sequence on the control panel.
4) Using the keypad on the control panel, enter the address of the appropriate photointerrupter, and check the indication.

Caution:
The machine's motor can start to operate in response to the changes in the sensor state; take adequate care.

Name	+ probe	Checks		Display indication	Voltage reading on meter
	Address				
PS1 Scanner home position sensor (SCHP)	J111A-2 PC007-03	Move the scanner by hand in standby.	The light-blocking plate is at PS1.	1	5V
			The light-blocking plate is not at PS1.	0	0V
PS3 Scanner original leading edge 1 sensor (SCDP1)	J111A-5 PC107-6	Move the scanner by hand in standby.	The light-blocking plate is at PS3.	0	5V
			The light-blocking plate is not at PS3.	1	0V
PS5 Copyboard cover open/closed sensor (CBCC)	J112A-4 PC007-02	Move the copyboard cover by hand in standby.	The copyboard cover is closed.	1	5V
			The copyboard cover is opened.	0	0V
PS6 Lens X home position sensor (LXHP)	J110A-8 PC102-02	Put paper over the lens Y home position sensor in standby.	The light-blocking plate is not at PS6.	0	0V
			The light-blocking plate is at PS6.	1	5V
PS7 Lens Y home position sensor (LYHP)	J110B-2 PC102-03	Put paper over the lens Y home position sensor in standby.	The light-blocking plate is not at PS7.	0	0V
			The light-blocking plate is at PS7.	1	5V
PS8 Holding tray feeding assembly 1 paper sensor (PS8D)	J119A-4 PC002-04	Put paper in the detecting lever assmbly of PS8 in standby.*	Paper is present.	1	5V
			Paper is not present.	0	0V

* Or, tape the detecting lever in place, and push in the feeding unit, holding tray, and holding tray feeding assmebly inside the machine.

Name	+ probe	Checks		Display indication	Voltage reading on meter
	Address				
PS9 Holding tray feeding assmbly 2 paper sensor (PS9D)	J113B-12	Put paper in the detecting lever assmbly of PS9 in standby.*	Paper is present.	1	5V
	PC002-03		Paper is not present.	0	0V
PS10 External delivery sensor (EXDPD)	J108B-7	Put paper in the detecting lever assembly of PS10 in standby.*	Paper is present.	1	5V
	PC005-04		Paper is not present.	0	0V
PS11 Fixing cleaning belt length sensor (CBOP)	J108A-13	Put paper in the detecting lever assembly of PS11 in standby.**	Paper is present.	1	5V
	PC005-05		Paper is not present.	0	0V
PS12 Internal delivery sensor (IDPD)	J108B-12	Put paper in the detecting lever assmbly of PS12 in standby.*	Paper is present.	0	0V
	PC005-02		Paper is not present.	1	5V
PS14 Holding tray registration sensor (PS14D)	J113A-3	Put paper in the detecting lever assmbly of PS14 in standby.*	Paper is present.	1	5V
	PC005-07		Paper is not present.	0	0V
PS15 Holding tray inlet paper sensor (PS15D)	J113B-10	Put paper in the detecting lever assmbly of PS15 in standby.*	Paper is present.	1	5V
	PC005-06		Paper is not present.	0	0V

* Or, tape the detecting lever in place, and push in the feeding unit, holding tray, and holding tray feeding assemebly inside the machine.

** Or, put paper over the sensor to block its photocell.

Name	+ probe Address	Checks		Display indication	Voltage reading on meter
PS17	J113B-11	Put paper in the detecting lever assembly of PS17 in standby.*	Paper is present.	1	5V
Holding tray pick-up sensor (PS17D)	PC005-09		Paper is not present.	0	0V
PS19	J113B-6	Put paper in the detecting lever assembly of PS19 in standby.*	Copy paper is present.	1	5V
Holding tray re-circulating bar home position sensor (HPLPD)	PC005-10		Copy paper is not present.	0	0V
PS20	J113A-10	Move the rear partition by hand in standby.	The light-blocking plate is at PS20.	1	5V
Holding tray Y home position sensor (HTYHP)	PC100-3		The light-blocking plate is not at PS20.	0	0V
PS21	J113B-1	Move the side guide by hand in standby.	The light-blocking plate is at PS21.	1	5V
Holding tray X home position sensor (HTXHP)	PC100-2		The light-blocking plate is not at PS21.	0	0V
PS22	J115B-7	Put paper into the detecting lever assembly of PS22 in standby.	Paper is present.	1	5V
Multifeeder paper sensor (MFS)	PC002-05		Paper is not present.	0	0V
PS23	J108A-7	Move the detecting lever by hand in standby.	The light-blocking plate is at PS23.	1	5V
Registration paper sensor (RGPD)	PC002-02		The light-blocking plate is not at PS23.	0	0V
PS24	J116B-7	Move the detecting lever by hand in standby.	The light-blocking plate is at PS24.	1	5V
Pick-up vertical path 0 sensor (PS24D)	PC002-00		The light-blocking plate is not at PS24.	0	0V

* Or, tape the detecting lever in place, and push in the feeding unit, holding tray, and holding tray feeding assmebly inside the machine.

Name	+ probe Address	Checks		Display indication	Voltage reading on meter
PS25 Casette 3 lifter position sensor (C3LTP)	J117A-4 PC008-08	Move the detecting lever by hand in standby.	The light-blocking plate is at PS25.	1	5V
			The light-blocking plate is not at PS25.	0	0V
PS26 Casette 3 paper sensor (C3PD)	J117A-7 PC008-06	Move the detecting lever by hand in standby.	The light-blocking plate is at PS26.	1	5V
			The light-blocking plate is not at PS26.	0	0V
PS27 Pick-up vertical path 3 sensor (PS27D)	J117B-4 PC008-04	Move the detecting lever by hand in standby.	The light-blocking plate is at PS27.	1	5V
			The light-blocking plate is not at PS27.	0	0V
PS28 Casette 4 lifter position sensor (C4LTP)	J130A-4 PC008-09	Move the detecting lever by hand in standby.	The light-blocking plate is at PS28.	1	5V
			The light-blocking plate is not at PS28.	0	0V
PS29 Casette 4 paper sensor (C4PD)	J130B-7 PC008-07	Move the detecting lever by hand in standby.	The light-blocking plate is at PS29.	1	5V
			The light-blocking plate is not at PS29.	0	0V
PS30 Pick-up vertical path 4 sensor (PS30D)	J130B-4 PC008-05	Move the detecting lever by hand in standby.	The light-blocking plate is at PS30.	1	5V
			The light-blocking plate is not at PS30.	0	0V
PS31 Deck lifter position sensor (RDLTP)	J116A-4 PC007-14	Move the detecting lever by hand in standby.	The light-blocking plate is at PS31.	1	5V
			The light-blocking plate is not at PS31.	0	0V
PS32 Deck paper sensor (RDPD)	J116A-7 PC007-10	Move the detecting lever by hand in standby.	The light-blocking plate is at PS32.	1	5V
			The light-blocking plate is not at PS32.	0	0V

Name	+ probe	Checks		Display indication	Voltage reading on meter
	Address				
PS33	J119A-7	Move the detecting lever by hand in standby.	The light-blocking plate is at PS33.	1	5V
Pick-up vertical path 1 sensor (PS33D)	PC007-12		The light-blocking plate is not at PS33.	0	0V
PS36	J121B-10	Move the detecting lever by hand in standby.	The light-blocking plate is at PS36.	1	5V
Pick-up vertical path 2 sensor (PS36D)	PC007-13		The light-blocking plate is not at PS36.	0	0V
PS37	J116B-13	Move the detecting lever by hand in standby.	The light-blocking plate is at PS37.	—	5V
Deck limiter sensor (RDEL)	—		The light-blocking plate is not at PS37.	—	0V
PS38	J116B-10	Move the detecting lever by hand in standby.	The light-blocking plate is at PS38.	1	5V
Deck open/closed sensor (RDEOP)	PC007-04		The light-blocking plate is not at PS38.	0	0V
PS41	J119B-4	Move the detecting lever by hand in standby.**	The light-blocking plate is at PS41.	1	5V
Upper right door sensor (RUPDOP)	PC007-00		The light-blocking plate is not at PS41.	0	0V
PS42	J119B-7	Move the detecting lever by hand in standby.**	The light-blocking plate is at PS42.	1	5V
Lower right door sensor (RLWDOP)	PC007-01		The light-blocking plate is not at PS42.	0	0V
PS46	J105A-9	Move the detecting lever by hand in standby.	The light-blocking plate is at PS46.	1	5V
Multifeeder door sensor (MFDC)	PC005-03		The light-blocking plate is not at PS46.	0	0V

* Or, tape the detecting lever in place, and push in the feeding unit, holding tray, and holding tray feeding assmebly inside the machine.

** Or, put paper over the sensor to block its photocell.

Name	+ probe Address	Checks		Display indication	Voltage reading on meter
PS47 Fixing assembly outlet paper sensor (FXDEL)	J108B-4 PC005-08	Move the detecting lever by hand in standby.*	The light-blocking plate is at PS47.	1	5V
			The light-blocking plate is not at PS47.	0	0V
PS50 (cassette 3 open/closed sensor)	J117B-7 PC009-5	Hold the grip of the cassette 3, and move it.	When the light-blocking plate is at PS50	0	5V
			When the light-blocking plate is not at PS50	1	0V
PS51 (cassette 4 open/closed sensor)	J130B-7 PC009-6	Hold the grip of the cassette 4, and move it.	When the light-blocking plate is at PS51	1	5V
			When he light-blocking plate is not at PS51	0	0V
PS52 (claw jam sensor)	J108A-19 PC009-1	Move the detecting lever by hand in standby*.	The light-blocking plate is at PS52.	1	5V
			The light-blocking plate is not at PS52.	0	0V
PS53 (fixing/feeding unit sensor)	J108A-2 PC005-1	Move the releasing lever of the fixing/feeding unit by hand in standby.	The light-blocking plate is at PS53.	0	0V
			The light-blocking plate is not at PS53 (unit set).	1	5V

* Or, tape the detecting lever in place, and push in the feeding unit, holding tray, and holding tray feeding assmebly inside the machine.

** Or, put paper over the sensor to block its photocell.

7. Registering the Cassette/Multifeeder Paper Width Basic Value (∗4∗)

Perform this under the following conditions:

- If you have replaced the paper width detecting VR of the copier (including the multifeeder).
- If you have adjusted the front/rear registration for the cassette.

For the cassettes 1 through 5, you must register values for two types (STMTR/A4R) for each cassette; for the multifeeder, you must register values for three types (A6R, A4R, A4).

a. Cassettes 3 and 4

The following uses the cassette 3 as an example.

1) Select the 8th screen in service mode (∗4∗).
2) Slide out the cassette 3, and set the paper width guide plate inside the cassette to 'STMTR', and set the cassette to the copier.
3) Press 'C3_STMTR' on the control panel display.
4) Press '∗' key.
   - Check to make sure that the value XXX under 'C3_STMTR:XXX' is '(XXX)'.
5) Slide out the cassette 1, and set the paper width guide plate inside the cassette to 'A4R', and set the cassette in the copier.
6) Press 'C3_A4R' on the control panel screen.
7) Press '∗' key.
   - Check to make sure that the value YYY under 'C3_A4R:YYY' is '(YYY)'.

b. Multifeeder

Perform the steps shown for the cassettes 3 and 4; however, in the case of the multifeeder, you must perform them for A6R (105mm width), A4R, and A4.

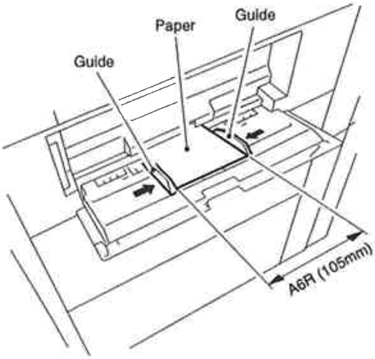


Figure 10-249

III. TROUBLESHOOTING IMAGE FAULTS

A. Making Initial Checks

1. Site of Installation

a. Make sure that the power supply voltage is as rated (±10%; the power plug must remain connected at night).
b. Make sure that the site is not subject to high temperature/humidity (near water faucets, water boilers, humidifiers; avoid areas near refrigerators or sources of fire and areas subject to dust).
c. Avoid areas subject to ammonium gas.
d. Avoid areas subject to direct rays of the sun.
As necessary, provide curtains.
e. Make sure that the room is well ventilated.
f. Make sure that the floor is level so that the machine will remain level.
g. Make sure that the machine will remain powered at night as well.
Check the site environment to see if it fits the above conditions.

2. Checking the Originals

Try to identify whether the problem is due to the originals used or to the machine.

a. The copy density level is best adjusted to 5 ±1 (scale).
b. Originals with a reddish background can generate copies with poor contrast; e.g., red sheets, red slips.
c. Checking the Density of Originals

Reference:

Originals which are diazo copies or which have a high transparency tend to generate copies which can be mistaken for "foggy" copies. Originals prepared in light pencil tend to generate copies which can be mistaken for "light" copies.

3. Copyboard Cover, Copyboard Glass, and Standard White Plate

Check the copyboard cover, copyboard glass, and standard white plate for dirt. If soiled, clean them with a solution of mild detergent or alcohol. If scratches are found, replace them.

4. Charging Assemblies

a. Check each charging assembly for dirt and charging wires for faults (scratches).
b. Clean the charging wire and the shielding plate of each charging assembly. (If dirt still exists, replace the part.)
c. Check the height of each charging wire.
d. Check to make sure that each charging assembly is properly installed.
e. Check the charging wire for rusting.
f. Check the anti-vibration rubber (charging assembly) for displacement. (This does not apply to the primary charging assembly.)

5. Checking the Developing Assembly

a. Check to make sure that the rolls at both ends of the developing assembly are in contact with the drum.

b. Check to make sure that there is an even coating of toner on the surface of the developing cylinder.

6. Checking the Paper

a. Check to see if the paper is of a type recommended by Canon.

b. Check to see if the paper is damp. Make copies using paper fresh out of package.

7. Checking the Periodically Replaced Parts

Check the parts against the scheduled servicing chart and the periodically replaced parts table; as necessary, replace them.

8. Others

Bringing a machine from a cold to warm place in winter can cause condensation inside the machine, leading to various problems.

Reference:

a. Condensation on the scanning system (glass, mirror, lens) leads to light images.

b. Condensation in the charging system leads to leakage.

c. Condensation on the pick-up or the feeding guide plate leads to feeding problems.

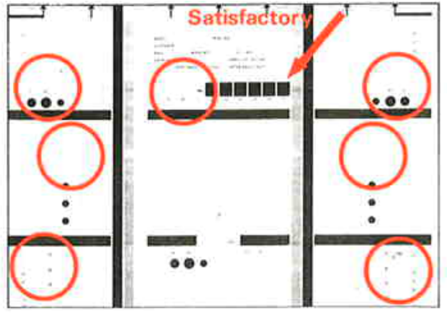
If condensation is noted, dry wipe the part or leave the machine powered and alone for 60 min.

Note:

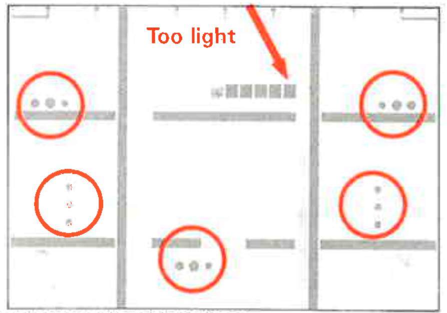
If the density is uneven (difference between the separation side and the rear), the image is too light, or the copy is foggy, try the "Image Adjustment Basic Procedure" first.

B. Image Fault Samples

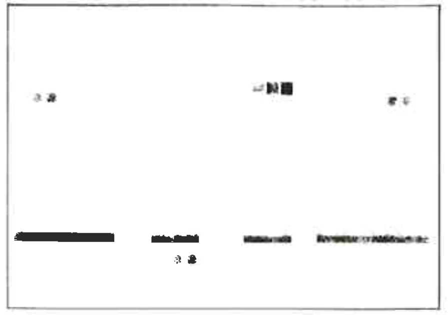
Note: The samples are made artificially to provide an idea of faulty copies, and may not represent actual faults.
(The NA-3 Test Sheet was copied in DIRECT mode on A4 paper, and reduced for printing.)



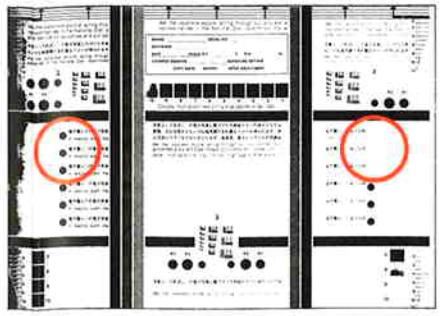
1. The copy is too light (halftone only).



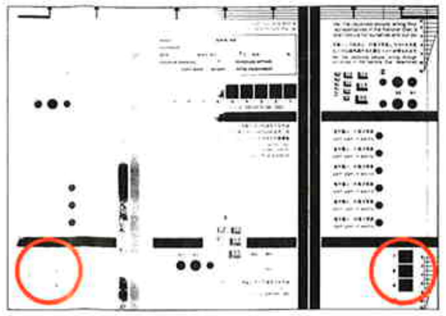
2. The copy is too light (both halftone and solid black).



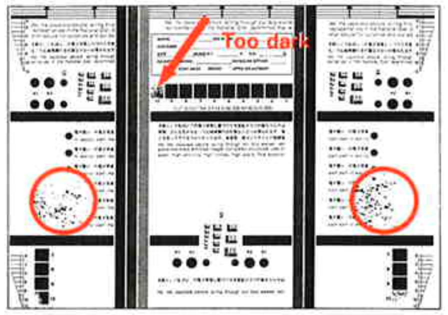
3. The copy is too light (entire copy, appreciably).



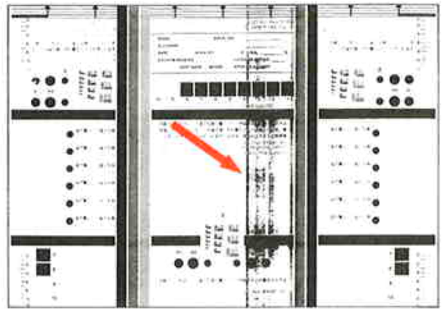
4. The copy has uneven density (darker along front).



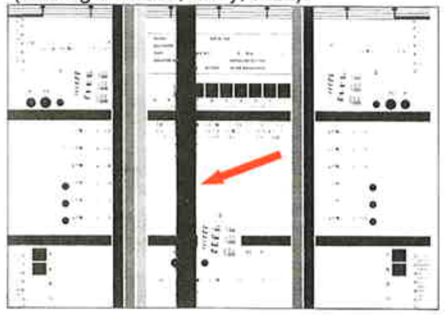
5. The copy has uneven density (lighter along front).



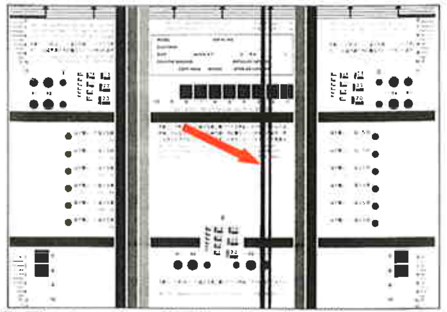
6. The copy is foggy (entire copy).



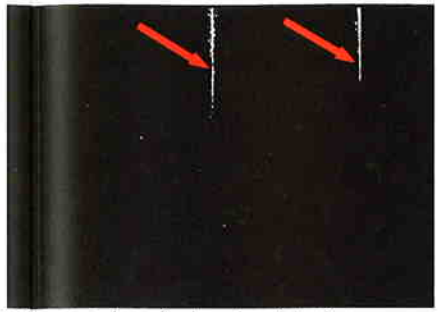
7. The copy is foggy (feeding direction).



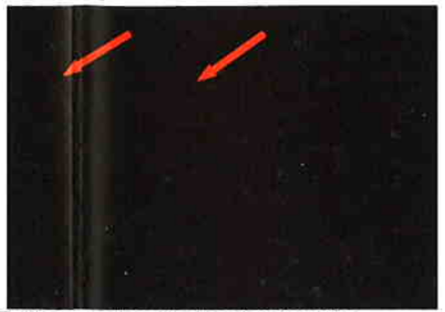
8. The copy has black lines (feeding direction, fuzzy, thick).



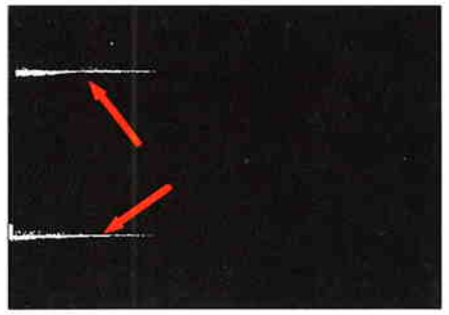
9. The copy has black lines (feeding direction, fine).



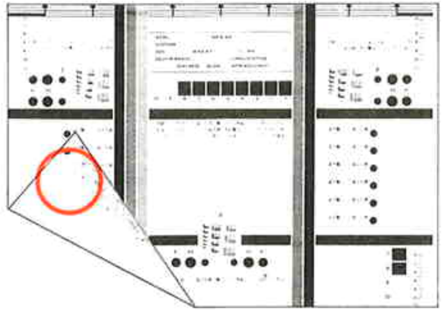
10. The copy has white strips (feeding direction).†



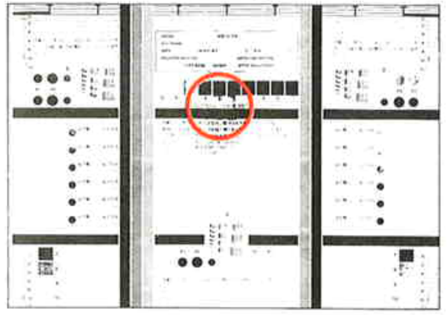
11. The copy has white lines (feeding direction).*



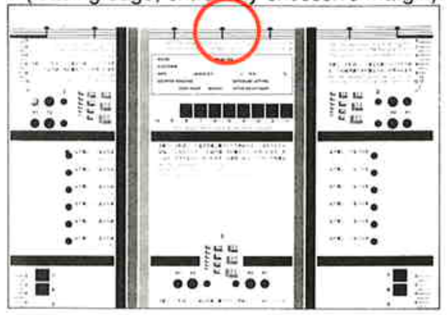
12. The copy has white strips (cross-feeding direction).



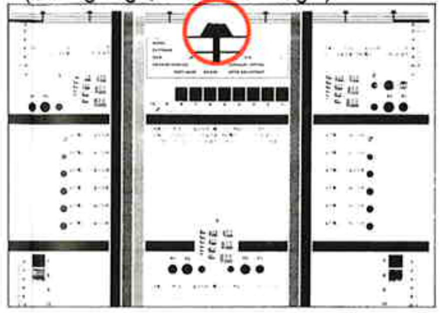
13. The back of the copy is soiled.



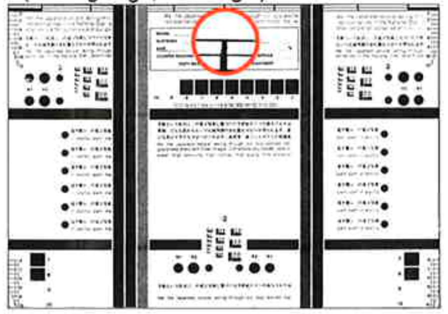
14. The copy has poor fixing.



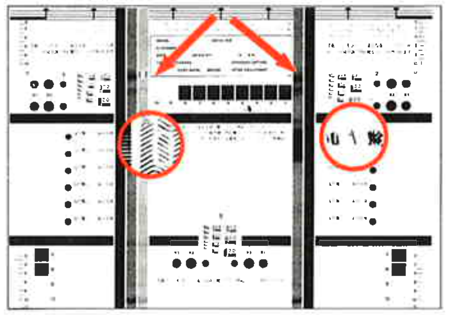
15. The copy has displaced registration (leading edge, extremely excessive margin).



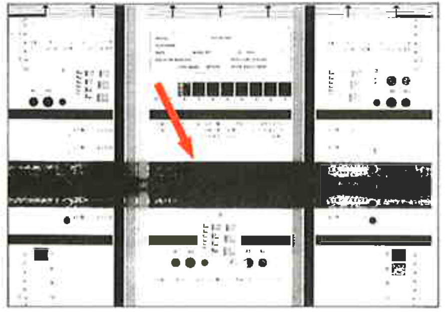
16. The copy has displaced registration (leading edge, excessive margin).



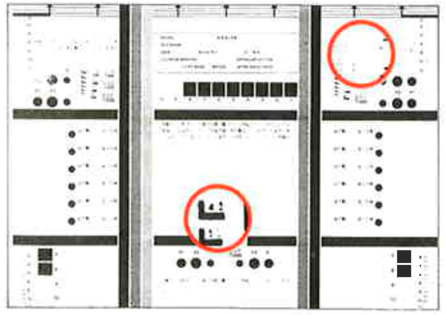
17. The copy has displaced registration (leading edge, no margin).



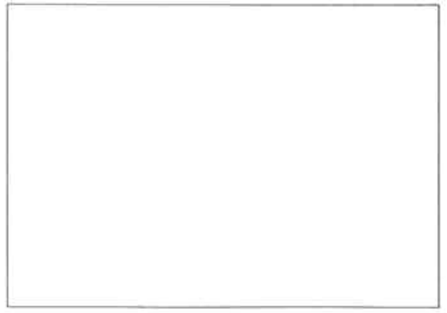
18. The copy has blurred images.



19. The copy is foggy (cross-feeding direction).



20. The copy has poor sharpness.



21. The copy is blank.

22. The copy is solid black.

* Copies made with the copyboard lifted; faults may also appear on normally made copies.
† Strips may vary in width.

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C. Troubleshooting Image Faults

1. The copy is too light. (halftone area only)

Cause	Step	Checks	YES/NO	Action
	1	Perform the Image Adjustment Basic Procedure. Is the problem corrected?	YES	End.
Scanner	2	Clean the standard white plate, mirror, lens, and dust-proofing glass. Is the problem corrected?	YES	End.
Developing assembly	3	Are the rolls on the developing assembly in firm contact with the drum during copying?	NO	Check the developing assembly locking lever.
Developing assembly	4	Is the coating of toner on the developing cylinder even?	NO	Check the developing assembly.
Lamp regulator	5	Replace the lamp regulator. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

2. The copy is too light. (solid black also)
3. The copy is too light. (overall, considerably)

Cause		Step	Checks	YES/NO	Action
		1	Perform the Image Adjustment Basic Procedure. Is the problem corrected?	YES	End.
		2	Turn OFF the power switch in the middle of copying, and open the front door. Is the toner image on the surface of the photosensitive drum before transfer more or less normal?	NO	Go to step 7.
Transfer	Transfer/ separation assembly	3	Is the charging wire of the transfer charging assembly properly hooked and is its position correct?	NO	1. Hook the charging wire properly. 2. Adjust the height of the charging wire.
		4	Is the transfer/separation charging assembly installed properly?	NO	1. Clean the charging wire. 2. Install the charging assembly properly.
	Copy paper	5	Change the setting under 'FUZZY' in service mode (✱5✱) to '1', and make copies. Is the problem corrected?	YES	End. (The problem is due to the environment.)
				NO	Return the setting under 'FUZZY' to '0'; and go to the next step.
		6	Try fresh copy paper. Is the image darker?	YES	1. The paper may be moist. Advise the user on the correct method of storage. 2. Advise the user that using paper not recommended by Canon may not bring the best results.

Cont'd

Cause		Step	Checks	YES/NO	Action
Transfer	Transfer lower guide, Varistor	7	Measure the resistance between the transfer lower guide and metal portion of the feeding assembly with a meter. Is it 0Ω?	YES	1. Check the transfer guide if it is in contact with a metal portion (side plate of the feeding assembly, for example). 2. Replace the varistor.
	DC controller PCB			NO	Check the high-voltage transformer (HVT) and the DC controller PCB.
Development	Developing assembly	8	Is the developing assembly installed properly? Are the developing rolls of the developing assembly in firm contact with the photosensitive drum?	NO	Check the developing assembly locking unit.
Pre-transfer charging assembly		9	Is the pre-transfer charging wire hooked properly and is its height normal?	NO	1. Hook the charging wire properly. 2. Adjust the height of the charging wire.
		10	Is the pre-transfer charging assembly inserted properly?	NO	1. Clean the charging wire. 2. Install the charging assembly properly.
Potential control, Photosensitive drum		11	Turn OFF and then ON the power switch. Check VD and VL1 in service mode ($\boxed{*}\boxed{1}\boxed{*}$). Are the settings of VDM and VL1M identical with the target values (VDT, VL1T) ±10 V?	NO	Check the potential control system; if normal, replace the photosensitive drum.
Developing bias control				YES	Check the developing bias control system.

4. The copy has uneven density. (darker at front)
5. The copy has uneven density. (lighter at front)

Cause	Step	Checks	YES/NO	Action
Primary charging wire	1	Perform the Image Adjustment Basic Procedure. Is the problem corrected?	YES	End.
Developing assembly	2	Are the developing rolls of the developing assembly in firm contact with the photosensitive drum?	NO	Check the developing assembly locking unit.
Scanner	3	Clean the scanning lamp, reflecting plate, side deflecting plate, mirror, lens, dust-proofing glass, and heat-absorbing glass. Is the problem corrected?	YES	End.
Pre-exposure lamp	4	Is the pre-exposure lamp ON during copying?	NO	1. Replace the pre-exposure lamp. 2. Replace the DC controller PCB.
Developing assembly	5	Is the coating of toner on the developing cylinder even?	NO	1. Clean the tip of the blade for the developing assembly. (dry wiping) 2. Clean the surface of the developing cylinder. 3. Check the toner inside the developing assembly to find out if it is even.
Charging assembly, Copy paper			YES	1. Clean all charging wires once again, and check the position of each. 2. Try replacing copy paper.

6. The copy is foggy. (overall)

Cause	Step	Checks	YES/NO	Action
LIGHT_5	1	Perform the Image Adjustment Basic Procedure. Is the problem corrected?	YES	End.
Scanner	2	Clean the scanning lamp, reflecting plate, side reflecting plate, mirror, lens, dust-proofing glass, and heat-absorbing glass. Is the problem corrected?	YES	End.
Cleaning assembly	3	Is the cleaning blade installed properly?	NO	Install the cleaning blade correctly.
Pre-exposure lamp, DC controller PC	4	Is the pre-exposure lamp ON during copying?	NO	1. Replace the pre-exposure lamp. 2. Replace the DC controller PCB.
Developing roll	5	Is the developing roll worn?	YES	Replace the developing roll.
Developing cylinder	6	Is the developing cylinder worn?	YES	Replace the developing cylinder.
Lamp regulator	7	Replace the lamp regulator. Is the problem corrected?	YES	End.
Potential control system	8	Make checks on p. 10-35. Is the potential sensor normal?	YES	Replace the DC controller PCB.
DC controller PCB.	9	Set the meter range to 30 VDC. Is the voltage between J114A-2 (DCBC) and J114A-13 (GND) on the DC controller PCB during copying between 2 and 11 V?	NO	Replace the DC controller PCB.
High-voltage transformer, Developing assembly			YES	1. Check the wiring from the DC controller PCB to the high-voltage transformer; if normal, replace the high-voltage transformer. 2. Check the developing assembly.

7. The copy has vertical fogging.
8. The copy has black lines. (vertical, fuzzy, thick)

Cause	Step	Checks	YES/NO	Action
Primary charging assembly	1	Clean the primary charging wire, grid wire, and shielding plate. Is the problem corrected?	YES	End.
Scanner	2	Clean the scanning lamp, reflecting plate, side reflecting plate, lens, mirror, dust-proofing glass. Is the problem corrected?	YES	End.
Pre-exposure lamp	3	Clean the pre-exposure lamp. Is the problem corrected?	YES	End.
Developing assembly	4	Is the coating of toner on the developing assembly even?	NO	Check the edge of the blade for the developing assembly, and clean it.
Fixing assembly, Cleaning assembly			YES	Check the fixing assembly and the cleaning assembly.

9. The copy has black lines. (vertical, thin)

Cause	Step	Checks	YES/NO	Action
	1	Press the Copy Start key, and turn OFF the power switch while copy paper is in the feeding assembly. Are there black lines on the copy before it moves through the fixing assembly?	NO	Go to step 5.
Photosensitive drum cleaning assembly	2	Is there paper trapped on the cleaning blade of the cleaning assembly?	YES	Remove the foreign matter, and clean the cleaning blade and the outside of the assembly.
	3	Are there scratches on the edge of the cleaning blade? (Feel the edge of the cleaning blade for scratches.)	YES	Switch the edges. If both edges have scratches, replace the cleaning blade.
Photosensitive drum	4	Are there scratches or black lines in the peripheral direction of the photosensitive drum?	YES	Replace the photosensitive drum. If scratches exist, identify the cause.
Developing assembly, Exposure system			NO	Check the developing assembly and the exposure system.
Fixing assembly	5	Check the fixing assembly upper roller surface for scratches or black lines in peripheral direction.	YES	1. Replace the upper roller. 2. Check the cleaning belt take-up mechanism. 3. Check the reciprocating mechanism of the thermistor and the separation claw to see if it operates normally.
			NO	Check the fixing assembly inlet assembly for dirt.

10. The copy has white spots. (vertical)
11. The copy has white lines. (vertical)

Cause	Step	Checks	YES/NO	Action
Fixing assembly	1	Press the Copy Start key with the copyboard cover open, and turn OFF the power switch while the copy paper is moving through the fixing assembly. Does the copy image have white spots or white lines before it goes through the fixing assembly?	NO	1. Clean the inlet assembly (upper, lower) of the fixing assembly. 2. Check the fixing assembly upper roller. 3. Check the take-up and cleaning mechanisms of the cleaning belt. 4. Clean the separation claw.
Primary charging wire	2	Clean the charging wire, grid wire, and shielding plate of the primary charging assembly. Is the problem corrected?	YES	Clean the part thoroughly with alcohol. If dirt persists, replace the charging wire.
Developing assembly	3	Is the coating of toner on the developing cylinder even?	NO	Check the blade edge of the developing assembly for paper lint or the like.
Copy paper	4	Try fresh copy paper. Is the problem corrected?	YES	The copy paper may be moist. Advise the user on the correct method of storing paper.
Photosensitive drum	5	Are there scratches in the peripheral direction of the photosensitive drum corresponding to image areas?	YES	Investigate the cause of the scratches, and replace the photosensitive drum.

Cont'd

Cause	Step	Checks	YES/NO	Action
Transfer/separation charging assembly, Pre-transfer charging assembly	6	Is the cleaning assembly separation claw in contact with the copy paper while the paper is being fed?	YES	1. Clean the pre-transfer charging assembly and the transfer/separation charging assembly. If the dirt still exists, replace the charging wire. 2. Try replacing copy paper. 3. Select 'FUZZY' in service mode ($\boxed{*}\boxed{5}\boxed{*}$), and change the setting to '3'.
Blank exposure lamp, DC controller PCB	7	Are the blank exposure lamp LEDs ON while the scanner is moving forward for areas of the image corresponding to white spots or white lines?	YES	Check the wiring from the blank exposure lamp to the DC controller PCB; if normal, replace the DC controller PCB.
Light from outside			NO	Check if the photosensitive drum is exposed to external light.

12. The copy has white spots. (horizontal)

Cause	Step	Checks	YES/NO	Action
Developing assembly	1	Is the problem noted at intervals of about 52 mm?	YES	1. Clean the developing rolls. 2. Dry wipe the surface of the developing cylinder. 3. If scratches are found on the surface of the developing cylinder, replace the developing cylinder.
Drum	2	Is the problem noted at intervals of about 25 cm?	YES	1. Clean the drum. 2. If scratches are found on the drum, replace the drum.
Copy paper	3	Try fresh copy paper. Is the problem corrected?	YES	The copy paper may be moist. Advise the user on the correct method of storage (place, etc.).
Scanner rail, Scanner cable	4	Is the problem noted at the same location on every copy?	YES	1. Check the scanner rail for foreign matter. 2. Adjust the tension of the scanner cable.
Charging wire	5	Are there scratches on the surface of the photosensitive drum?	NO	Clean each charging assembly.
Photosensitive drum			YES	Replace the photosensitive drum.

13. The back of the copy is soiled.

Cause	Step	Checks	YES/NO	Action
	1	Turn OFF the power switch when copy paper is moving through the feeding assembly. Is the back of the paper soiled at the time?	NO	Go to step 3.
Developing assembly	2	Is the problem noted at intervals of about 52 mm?	YES	1. Clean the registration roller. 2. Clean the transfer guide. 3. Check the developing assembly for leakage of toner.
Cleaning assembly			NO	1. Clean the feeding assembly. 2. Check the cleaning assembly for leakage of toner.
Fixing assembly	3	Are the take-up mechanism and upper roller cleaning mechanism normal?	NO	1. Check the cleaning belt take-up mechanism. 2. Clean the upper and lower rollers. 3. Clean the fixing assembly inlet guide.
Delivery assembly			YES	Clean the delivery roller and the separation claw.

14. The copy has fixing faults.

Cause		Step	Checks	YES/NO	Action
Fixing assembly	Upper roller, Lower roller	1	Is the problem vertical?	YES	Check the upper and lower rollers for scratches.
	Heater (H1, H2)	2	Does the heater (H1, H2) turn ON as soon as the power is turned on?	NO	See "The fixing heater fails to operate."
	Lower roller pressure	3	Is the lower roller pressure (nip) within standards?	NO	Adjust the lower roller pressure.
Copy paper		4	Is the paper of a type recommended by Canon?	NO	Try recommended paper; if the results are good, advise the user to use recommended paper.
Upper fixing roller				YES	Check the upper roller for peeling.

15., 16., 17. The copy has leading edge displacement.

Cause	Step	Checks	YES/NO	Action
Original	1	Is the original placed correctly?	NO	Place it correctly.
Copy paper	2	Is the paper of a type recommended by Canon?	NO	Try recommended paper; if the results are good, advise the user to use recommended paper.
	3	Is the leading edge displacement the same regardless of the source of paper (paper deck, cassette)?	YES	If it is the same, go to step 4.
			NO	Check each pick-up system.
Pick-up roller	4	Has the pick-up roller reached its life?	YES	If wear is noted on the pick-up roller, replace it.
Leading edge margin	5	Perform leading edge margin adjustment. Is the problem corrected?	YES	End.
Registration clutch, Registration roller	6	Set the meter range to 30 VDC. Does the voltage between J108A-4 (+) and J108-A5 (-) on the DC controller PCB change momentarily from 24 to 0 V while the scanner is moving forward?	YES	1. Replace the No. 1 registration clutch. 2. Check the registration roller for deformation and wear.
DC controller PCB			NO	Replace the DC controller PCB.

18. The copy has a blurred or fuzzy image.

Cause	Step	Checks	YES/NO	Action
Scanner drive gear	1	Do the lengths of the cable wound on the cable pulley overlap while the scanner is moving? Or, is the cable too slack or too taut?	YES	1. Route the cable once again. 2. If the cable is twisted or frayed, replace it.
Scanner rail	2	Move the No. 1 mirror mount slowly by hand. Does it move smoothly?	NO	Clean the surface of the scanner rail with alcohol solution; thereafter, apply a small amount of lubricant.
Photosensitive drum	3	Is the problem noted at intervals of about 25 cm?	YES	1. Check the drum gear. 2. Check the ends of the drum (in contact with the developing rolls) for scratches and protrusions.
Drum drive gear	4	Is the problem noted at intervals of about 3 mm?	YES	Check the drum drive gear.
Developing gear	5	Is the problem noted at intervals of 6 mm?	YES	Check the developing assembly.
Cleaning assembly gear	6	Is the problem noted at intervals of about 6 mm?	YES	Check the cleaning assembly.
Drum drive system			NO	Check the drum drive system.

19. The copy has horizontal fogging.

Cause	Step	Checks	YES/NO	Action
	1	Is the problem noted at the same location on every copy made in Direct?	YES	Go to step 3
Scanning lamp, Lam regulator	2	Does the scanning lamp flicker while the scanner is moving forward?	YES	Check the scanning lamp and the lamp regulator.
Scanner	3	Make a reduced copy. Is the problem noted at a different location?	NO	Check the scanner.
Feeding assembly			YES	Check the feeding assembly.

20. The copy has poor sharpness.

Cause	Step	Checks	YES/NO	Action
Copyboard glass	1	Is there oil or the like on the copyboard glass?	YES	Clean the copyboard glass.
Mirror position	2	Is the horizontal ratio on copies made in Direct within standards?	NO	Adjust the distance between No. 1 mirror and No. 2 mirror.
Scanner	3	Clean the scanning lamp, reflecting plate, mirror, lens, dust-proofing glass. Is the problem corrected?	YES	End.
Photosensitive drum	4	Replace the photosensitive drum. Is the problem corrected?	YES	End.
Lens drive assembly			NO	Check the operation of the lens drive assembly.

21. The copy is blank.

Cause	Step	Checks	YES/NO	Action
Primary charging assembly	1	Is the primary charging assembly installed properly?	NO	Install the primary charging assembly properly.
	2	Is the charging wire or the grid wire broken?	YES	Install the charging wire or the grid wire once again.
Developing assembly	3	Is the developing assembly locked to the drum?	NO	Check the developing assembly locking lever.
DC controller PCB	4	Is the blank exposure lamp OFF while the scanner is moving forward?	NO	Check the DC controller PCB.
Scanning lamp	5	Is the scanning lamp ON during copying?	NO	See "The scanning lamp fails to turn ON."
Connector	6	Are the connectors on each PCB connected properly?	NO	Connect the connectors properly.
Potential control system	7	Is control by the potential sensor performed properly?	NO	Replace the potential measurement unit.
Developing bias	8	Is the contact of the developing bias secured in place?	NO	Secure it in place.
Main motor (M1)	9	•Is half of the first copy blank? •Is the first copy blank and does the second copy have displaced registration? Or, does the copy jam (stationary)?	NO	Replace the main motor (M1).

22. The copy is completely black.

Cause	Step	Checks	YES/NO	Action
	1	Is the scanning lamp ON during copying?	NO	See "The scanning lamp fails to turn ON."

IV. TROUBLESHOOTING MALFUNCTIONS

A. Troubleshooting Malfunctions

Note:
Pay attention to the orientation/location of the spring used to force the detecting lever in place whenever you are installing/removing each sensor.

1. E000

Cause	Step	Checks	YES/NO	Action
Sub thermistor (TH2)	1	Turn off and then on the power switch. Is '000' indicated for about 5 sec and then is the power switch turned off automatically?	YES	Check the sub thermistor (TH2).
	2	Execute 'ERROR' in service mode ($\boxed{*}\boxed{4}\boxed{*}$) to reset 'E000'. Check that the fixing assembly is installed properly. Turn OFF the power switch, and disconnect and connect the power plug. Does the fixing roller heater turn ON when the power switch is turned ON? **Caution:** Take extra care. Repeating this procedure causes the fixing temperature to rise abnormally, damaging the fixing roller and the separation claw.	NO	Replace the DC controller PCB or the SSR.
Main thermistor (TH1)	3	Turn OFF the power switch, and wait until the upper fixing roller is cool; then, turn ON the power switch. Select the screen showing 'FTMP' in service mode ($\boxed{*}\boxed{1}\boxed{*}$). Does the value under 'FTMP' remain the same? (Turn OFF the power switch after the check.)	YES	Check the wiring from J108A on the DC controller PCB to the thermistor (TH1); if normal, replace the thermistor (TH1).
Thermistor	4	Is the thermistor in even contact with the upper fixing roller?	NO	Install the thermistor properly.
Thermistor	5	Clean the contact face of the thermistor. Is the problem corrected?	YES	End.

Cont'd

Cause	Step	Checks	YES/NO	Action
Environment	6	Does the problem occur only when the power is turned ON for the first time in the morning?	YES	•Advise the user that the site environment is outside the standards. •Advise the user to wait until the room is warm enough before turning on the power.
Main thermistor (TH1)	7	Replace the thermistor. Is the problem corrected?	YES	End.
DC controller			NO	Replace the DC controller.

2. E001

Cause	Step	Checks	YES/NO	Action
	1	Execute 'ERROR' in service mode ($\boxed{*}\boxed{4}\boxed{*}$), and open the front door and the delivery assembly to cool the fixing roller. Is 'E001' indicated as soon as the power switch is turned ON?	NO	Go to step 3.
Thermistor (TH1/TH2)	2	Turn OFF the power switch, and slide out the fixing feeding assembly. Disconnect the relay connector J2757 from the fixing unit, and set the tester range to 1 KΩ. Is the reading about 0Ω when the probe is connected to the harness terminal of the thermistor? (Be sure to connect J2757 after the check.)	YES	Replace the thermistor.
DC controller			NO	Replace the DC controller PCB.
AC driver	3	Replace the AC driver. Is the problem corrected?	YES	End.
DC controller			NO	Check the wiring from the AC driver to the DC controller; if normal, replace the DC controller.

3. E002
4. E003

Cause	Step	Checks	YES/NO	Action
	1	Execute 'ERROR' in service mode ($\boxed{*}\boxed{4}\boxed{*}$), and turn ON the power. Does any of the following apply? • The fixing heater fails to operate. • E002 or E003 is indicated.	YES	See the appropriate section.
	2	Is the contact of J108A, J2755, and relay connector J2757 on the DC controller and the connector J2745 in the fixing assembly normal? Further, is the wiring from the thermistor to the connector J108A normal?	NO	Correct the applicable problem.
Main thermistor (TH1)	3	Is the thermistor in even contact with the upper fixing roller?	NO	Install it properly.
Main thermistor (TH1)	4	Clean the contact face of the thermistor. Is the problem corrected?	YES	End.
Environment	5	Does the problem occur only when the power is turned ON for the first time in the morning?	YES	•Advise the user that the site environment is outside the standards. •Advise the user to wait until the room is warm enough before turning on the power.
Main thermistor (TH1)	6	Replace the thermistor. Is the problem corrected?	YES	End.
DC controller			NO	Replace the DC controller PCB.

5. E004

Cause	Step	Checks	YES/NO	Action
Fixing heater	1	Execute 'ERROR' in service mode ($\boxed{*}\boxed{4}\boxed{*}$). Does the fixing heater operate immediately after power-on?	NO	See "The fixing heater fails to operate."
AC driver	2	Replace the AC driver. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

6. E005

Cause	Step	Checks	YES/NO	Action
Cleaning belt	1	Is the cleaning belt of the fixing assembly taken up?	YES	Replace the cleaning belt.
Cleaning belt detecting lever	2	Is the position of the cleaning belt detecting lever correct?	NO	Correct the position of the lever.
Fixing feeding unit	3	Is the fixing feeding unit properly installed in the machine?	YES	The connector at the rear of the fixing feeding unit may have poor contact. Make a check.
DC controller PCB	4	Is the voltage between J108A-13 (+) and J108A-12 (–) on the DC controller PCB about 5 V? Is the cleaning belt length sensor (PS11) normal? (See the descriptions on how to check photointerrupters.)	NO	Replace the DC controller PCB.
Sensor			YES	Replace the sensor.

7. E006

Cause	Step	Checks	YES/NO	Action
Fixing feeding connector	1	Is the connector correctly fixed in position? Further, is it properly integrated?	NO	Check the connector assembly for its condition.

8. E010

Cause	Step	Checks	YES/NO	Action
	1	Is the connector of the main motor connected?	NO	Connect the connector.
DC controller PCB	2	Does the voltage between J111B-4 (+) and J111B-1 (–) on the DC controller PCB change from 0 V to about 5 V when the Copy Start key is pressed?	NO	Replace the DC controller PCB.
Main motor (M1)	3	Replace the main motor. Is the problem corrected?	YES	End.

9. E013

Cause	Step	Checks	YES/NO	Action
Waste toner feeding screw	1	Is the waste toner feeding screw drive gear pushing the waste toner feeding screw lock detection switch (MSW4)?	YES	The feeding screw inside the waste toner pipe may be locked because of an obstacle. Remove the waste toner pipe, and try turning the screw by hand. If it turns smoothly, install it once again and see if the problem has been corrected. If it does not turn, replace the waste toner pipe after correcting the cause.
MSW4	2	Does the voltage between J114B-1 (+) and J114B-2 (–) on the DC controller PCB change from about 5 to about 0 V?	NO	Replace MSW4.
DC controller PCB			YES	Replace the DC controller PCB.
Harness (vertical path roller drive clutch CL15)	3	Does the harness of the vertical path roller drive clutch have an open circuit?	YES	Replace CL15.

10. E015

Cause	Step	Checks	YES/NO	Action
Power supply (motor controller PCB is part of pick-up motor)	1	Set the tester range to 200 VDC. Connect the + probe to J612-3 and the – probe to J612-4 on the motor controller PCB. Is the voltage about 12 V?	NO	Check the wiring from the DC power supply PCB to the motor controller PCB; if normal, replace the DC power supply PCB.
DC controller PCB	2	Is the voltage between the following pins of the DC controller PCB as indicated? (+) / (–) / Voltage J114B-10 / J114B-9 / 12 V (approx.) J114B-12 / J114B-11 / 5 V (approx.)	NO	Check the wiring from the DC controller PCB to the motor controller PCB; if normal, replace the DC controller PCB.
	3	Connect the + probe to J114B-8 on the DC controller PCB and the – probe to GND. Does the voltage change to about 5 V when the motor starts to rotate?	NO	Check the wiring from the DC controller PCB to the motor controller PCB; if normal, replace the DC controller PCB.
Pick-up motor (M2)	4	Replace the pick-up motor (M2). Is the problem corrected?	YES	End.

11. E020

Cause	Step	Checks	YES/NO	Action
	1	Remove the upper cover of the developing assembly. Is toner in the developing assembly about to overflow? (Put the upper cover back on after the check.)	YES	Go to step 5.
	2	Is hopper full of toner?	NO	Go to step 5.
Hopper assembly sensor	3	Select 'PC002' in service mode ($\boxed{*}\boxed{2}\boxed{*}$). Is the indication for bit 10 (TEP) on the message display '0', indicating the absence of toner?	YES	Replace the hopper assembly sensor.
Hopper motor	4	Select 'HPPR_MTR' in service mode ($\boxed{*}\boxed{4}\boxed{*}$). Does the hopper motor rotate about 3 sec when the ∗ key is pressed?	NO	See "The hopper motor fails to rotate."
Connection between hopper assembly and developing assembly			YES	Check to make sure that the hopper assembly and the developing assembly are securely connected.
Toner sensor	5	Install the developing assembly, and set the copy count to '20'. Select 'P002' in service mode ($\boxed{*}\boxed{2}\boxed{*}$), and press the Copy Start key. Is the indication for bit 9 (DTEP) on the message display '0', indicating the presence of toner?	NO	Replace the toner level detecting circuit.
DC controller PCB			YES	Replace the DC controller PCB.
Connector (hopper assembly)	6	Is the connector disconnected?	YES	Connect the connector.
Outlet (hopper assembly)	7	Is the end of the outlet cover bent so that the amount of toner supplied from the hopper to the developing assembly is less than a specific amount?	YES	Replace the seal of the outlet, and replace both hopper collars 1 and 2 at the same time.

12. E030 (The total copy counter fails to operate.)

Cause	Step	Checks	YES/NO	Action
Total copy counter	1	Turn OFF the power, and remove J104B from the DC controller PCB. Set the tester range to x1KW, and measure the resistance between J104B-2 and J104B-1. Is it about 500W?	NO	Check the wiring from the DC controller PCB to the total copy counter; if normal, replace the total copy counter.
Total copy counter	2	Connect J104B to the DC controller PCB, and turn ON the power. Set the tester range to 30 VDC. Does the voltage between 104B-2 (+) and J104A-6 (–) on the DC controller change from about 24 to about 0 and then to about 24 V when the Copy Start key is pressed?	YES	Replace the total copy counter.
DC controller PCB			NO	Replace the DC controller PCB.

13. E031 (The option counter has an open circuit.)

Cause	Step	Checks	YES/NO	Action
Option counter	1	Turn OFF the power switch, and disconnect J104B of the DC controller PCB. Set the tester range to X1KΩ, and measure the resistance between J104B-6 and J104B-7. Is it about 500Ω?	NO	Check the wiring from the DC controller PCB to the total copy counter; if normal, replace the total copy counter.
Total copy counter	2	Connect J104B to the DC controller PCB, and turn ON the power switch. Set the tester range to 30 VDC. Does the voltage between J104B-6 (+) and J104A-6 (–) on the DC controller change from about 24 to about 0 then to about 24 V when the Copy Start key is pressed?	YES	Replace the total copy counter.
DC controller PCB			NO	Replace the DC controller PC.

14. E050

Cause	Step	Checks	YES/NO	Action
Holding tray X home position sensor (PS21)	1	Is the holding tray X home position sensor (PS21) normal?	NO	Replace the PS21.
Holding tray X motor (M8)	2	Disconnect J209 from the holding tray driver PCB. Is there electrical continuity between the following pins on the motor side? J209-1 and -2J209-5 and -6	NO	Replace the holding tray X motor (M8).
Holding tray driver PCB	3	Replace the holding tray driver PCB. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

15. E051

Cause	Step	Checks	YES/NO	Action
Holding tray Y home position sensor (PS20)	1	Is the holding tray Y home position sensor (PS20) normal?	NO	Replace PS20.
Holding tray Y motor (M9)	2	Disconnect J208 from the holding tray driver PCB. Is there electrical continuity between the following pins on the motor side? J208-4 and -5 J208-8 and -9	NO	Replace the holding tray Y motor (M9).
Holding tray driver PCB	3	Replace the holding tray driver PCB. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

16. E202 (Locks the keys but does not indicate a code.)

Cause	Step	Checks	YES/NO	Action
	1	Is the scanner at home position when E202 turns on?	NO	See "The scanner fails to move forward."
Scanner home position sensor	2	Is the scanner home position sensor (PS1) normal? (See the descriptions on how to check photointerrupters.)	NO	Check the wiring from the DC controller PCB to PS1; if normal, replace PS1.
DC controller PCB			YES	Replace the DC controller PCB.

17. E203

Cause	Step	Checks	YES/NO	Action
	1	Is the scanner at home position when E202 turns on?	NO	See "The scanner fails to move forward."
Scanner home position sensor	2	Is the scanner home position sensor (PS1) normal? (See the descriptions on how to check photointerrupters.)	NO	Check the wiring from the DC controller PCB to PS1; if normal, replace PS1.
DC controller PCB			YES	Replace the DC controller PCB.

18. E204 (Locks the keys but does not indicate a code.)

Cause	Step	Checks	YES/NO	Action
	1	Does the scanner move forward when the Copy Start key is pressed?	NO	See "The scanner fails to move forward."
Scanner original leading edge sensor 1 (PS3)	2	Is the scanner original leading edge sensor 1 (PS3) normal? (See the descriptions on how to check photointerrupters.)	NO	Check the wiring from the DC controller PCB to PS3; if normal, replace PS3.
DC controller PCB			YES	Replace the DC controller PCB.

19. E210 (The lens X direction drive system has an error.)
20. E212 (The lens Y direction drive system has an error.)

Cause	Step	Checks	YES/NO	Action
	1	Turn ON the power switch. Does the lens move in X/Y direction?	NO	See "The lens fails to move."
Lens X home position sensor (PS6)	2	Is the lens X/Y home position sensor (PS6/7) normal? (See the descriptions on how to check photointerrupters.)	NO	Check the wiring from the DC controller PCB to PS6; if normal, replace PS6.
Lens Y home position sensor (PS7)				Check the wiring from the DC controller PCB to PS7; if normal, replace PS7.
X direction belt support plate	3	Replace the DC controller PCB. Is the problem corrected?	YES	End.
DC controller PCB	4	Is the X direction drive belt and the belt support plate slipping against each other?	YES	Replace the belt support plate with one provided with spacers.

21. E240

Cause	Step	Checks	YES/NO	Action
DC controller	1	Turn ON and then OFF the power switch. Is the problem corrected?	YES	End.
			NO	Replace the DC controller PCB.

22. E243

Cause	Step	Checks	YES/NO	Action
DC controller PCB	1	Turn ON and OFF the power switch. Is the problem corrected?	YES	End.
			NO	Replace the DC controller PCB.
Control panel PCB	2	Replace the control panel PCB. Is the problem corrected?	YES	End.

23. E710/E711

Cause	Step	Checks	YES/NO	Action
Malfunction	1	Turn ON and OFF the power switch. Is the problem corrected?	YES	End.
DC control PCB			NO	Replace the DC controller PCB.

24. E712

Cause	Step	Checks	YES/NO	Action
Malfunction	1	Turn ON and OFF the power switch. Is the problem corrected?	YES	End.
Connector	2	Is the connector (J772) connecting the RDF and the copier connected securely?	NO	Replace the DC controller PCB.
RDF controller PCB	3	Replace the RDF controller PCB. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

25. E713

Cause	Step	Checks	YES/NO	Action
Malfunction	1	Turn ON and OFF the power switch. Is the problem corrected?	YES	End.
Connector	2	Is the connector (J703) connecting the sorter and the copier securely connected?	NO	Replace the DC controller PCB.
Sorter controller PCB	3	Replace the sorter controller PCB. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

26. E800

Cause	Step	Checks	YES/NO	Action
Malfunction	1	Turn ON and OFF the power switch.	YES	End.
J716	2	Is the connection of the relay connector J716 under the power switch (SW1) securely connected?	NO	Connect the connector securely.
Power switch (SW1)	3	Set the tester to the X1Ω range. Disconnect the relay connector J716, and connect the probe of the tester to the connector terminal on the power switch side. Is the resistance about 30Ω?	NO	Replace the power switch (SW1).
DC controller PCB			YES	Check the wiring from the DC controller PCB to the power switch (SW1); if normal, replace the DC controller PCB.

27. E802

Cause	Step	Checks	YES/NO	Action
Operation	1	Turn on and then off the power switch. Is the problem corrected?	YES	End.
DC controller PCB	2	Replace the DC controller PCB. Is the problem corrected?	YES	End.
Power supply unit			NO	Check the wiring from the DC controller PCB to the power switch (SW1), and check electrical continuity; if normal, replace the DC controller PCB.

28. AC power is absent.

Cause	Step	Checks	YES/NO	Action
Power plug	1	Is the power plug connected to the power outlet?	NO	Connect the power plug.
Main supply	2	Is the rated AC voltage at the power outlet?	NO	The problem is not of the copier's. Advise the user.
	3	Is there the specified voltage between J301-1 and J301-5, between J301-3 and J301-5, and between J302-1 and J302-3? (J301 and J302 are in the power supply unit.)	YES	End.
Circuit breaker (CB1)	4	Press the button of the circuit breaker (CB1). Is AC power supplied?	YES	End.
Power cord, Line filter (LF1)	5	Replace the power cord and the line filter (LF1). Is AC power supplied?	YES	End.
			NO	Check the wiring of the AC power supply line and contact of the connectors.
Front door	6	Is the front door securely closed?	NO	Close the front door.
Front door switch (SW2)	7	Close the front door. Is SW2 pressed?	NO	Close the front door.
Front door switch (SW2)	8	Remove the door switch, and connect the probes to 1 and 2 or 3 and 4 of the door switch. Is the resistance 0 Ω when the actuator is pressed and ∞Ω when released?	NO	Replace the door switch.
Wiring to door switch	9	Is the wiring connected to the door switch properly?	NO	Connect it properly.
Power switch (SW1)	10	Connect the probes to both terminals of the power switch (SW1). Is the resistance 0Ω when the switch is ON and ∞Ω when OFF?	NO	Replace the power switch.
Wiring			YES	Check the wiring of the AC power supply line and the connection of the connectors.

29. DC power is absent.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>YES/NO</th><th>Action</th></tr>
<tr><td>AC power supply</td><td>1</td><td>Is the rated voltage present between J301-1 and J301-5 and between J301-3 and J301-5 and between J302-1 and J302-3? (J301 and J302 are in the DC power supply unit.)</td><td>NO</td><td>See "AC power is absent."</td></tr>
<tr><td></td><td>2</td><td>Is the fuse (FU51, FU1) on the DC power supply PCB blown?</td><td>YES</td><td>Remove the cause, and replace the fuse.</td></tr>
<tr><td></td><td>3</td><td>Turn OFF the power switch, and disconnect the power plug; then, connect the power plug about 1 min later. Is DC power supplied when the power switch is turned ON?</td><td>YES</td><td>End.</td></tr>
<tr><td>Wiring, DC load</td><td rowspan="2">4</td><td rowspan="2">Turn OFF the power switch, and disconnect all connectors J303, J304, J305, J306, J308, J309, and J311 from the DC power supply PCB; turn ON the power switch, and measure the voltage between the terminals shown in Table.
<table>
<tr><th>Connector</th><th>Pin No.</th><th>Output</th><th>Remarks</th></tr>
<tr><td rowspan="3">J303</td><td>1</td><td>38VU</td><td>+10%,-7%</td></tr>
<tr><td>2</td><td>38VU</td><td>+10%,-7%</td></tr>
<tr><td>3</td><td>38VU</td><td>+10%,-7%</td></tr>
<tr><td rowspan="2">J304</td><td>2</td><td>24VR</td><td>±2%</td></tr>
<tr><td>4</td><td>24VU</td><td>+10%,-7%</td></tr>
<tr><td rowspan="4">J305</td><td>1</td><td>24VU</td><td>+10%,-7%</td></tr>
<tr><td>3</td><td>24VR</td><td>±2%</td></tr>
<tr><td>5</td><td>5VR</td><td>±4%</td></tr>
<tr><td>7</td><td>12VU</td><td>+10%,-7%</td></tr>
<tr><td>J306</td><td>1</td><td>24VU</td><td>+10%,-7%</td></tr>
<tr><td rowspan="3">J308</td><td>1</td><td>24VU</td><td>+10%,-7%</td></tr>
<tr><td>3</td><td>24VA</td><td>+10%,-20%</td></tr>
<tr><td>5</td><td>38VU</td><td>+10%,-7%</td></tr>
<tr><td rowspan="2">J309</td><td>1</td><td>24VU</td><td>+10%,-7%</td></tr>
<tr><td>3</td><td>24VU2</td><td>+10%,-7%</td></tr>
<tr><td rowspan="2">J311</td><td>1</td><td>24VA2</td><td>+10%,-7%</td></tr>
<tr><td>2</td><td>38VU</td><td>+10%,-7%</td></tr>
</table>
However, the above assumes that the inaccuracy of the AC input is ±10%.</td><td>YES</td><td>Turn OFF the power switch, and connect one of the connectors you have disconnected. Connect the connector, and turn ON the power. Repeat this procedure to find out the connector that activates the protection circuit, and check the wiring and DC loads from that connector.</td></tr>
<tr><td>DC power supply PCB</td><td>NO</td><td>Replace the DC power supply. See "AC power is absent."</td></tr>
</table>

30. Pick-up fails.

Cause	Step	Checks	YES/NO	Action
Upper right door, Lower right door	1	Are the upper right door and the lower right door closed properly?	NO	Close the doors properly.
Lifter	2	Does the lifter lower when the deck is slid out of the copier? Further, is the sound of the lifter moving up heard when the deck is set?	NO	See "The lifter fails to move up."
Pick-up roller	3	Does the pick-up roller rotate?	YES	If the roller is soiled, clean it with alcohol. If deformation by wear is noted, replace it.
Belt	4	Is the belt used to transmit drive to the pick-up roller attached properly?	NO	Attach the belt properly.
Drive belt, Gear, Coupling	5	Is the drive from the pick-up motor transmitted to the pick-up assembly through the drive belt, gear, and coupling?	NO	Check the drive belt, gear, and coupling.
DC controller PCB	6	Set the tester range to 30 VDC. Does the voltage between J116A-2 on the DC controller PCB and GND change from 24 to 0 V when the Copy Start key is pressed?	NO	Replace the DC controller PCB.
Deck pick-up clutch (CL14)			YES	Check the wiring up to the clutch; if normal, replace the clutch.

31. The deck lifter fails to move up.

Cause	Step	Checks	YES/NO	Action
Deck	1	Is the deck installed properly?	NO	Install the deck properly.
Lifter cable	2	Is the lifter cable routed properly?	NO	Route the cable correctly.
Spring, Lever	3	Push up the pick-up releasing lever by a finger. Does the pick-up roller lower?	NO	Remove the pick-up assembly, and check the spring and the lever.
Pick-up motor (M2)	4	Does the pick-up motor (M2) rotate?	YES	Go to step 6.
DC controller PCB	5	Set the tester range to 12 VDC. Does the voltage between J116B-10 on the DC controller PCB and GND (–) change from about 0 to 5 V when the deck is closed?	NO	Replace the DC controller PCB.
Deck open/closed sensor (PS38)			YES	Check the wiring to the sensor; if normal, replace the sensor.
Lifter position-sensor (PS31)	6	Set the tester range to 12 VDC. Is the voltage between J116A-4 (+) on the DC controller PCB and GND (–) as follows? 0 V when the deck is opened; and 5 V when the deck is closed.	YES	Check the wiring to the sensor; if normal, replace the sensor.
Deck lifter drive motor (M18)	7	Set the tester range to 30 VDC. Does the voltage between J119B-11 (+) on the DC controller PCB and GND (–) change from 0 to 24 V when the deck is slid inside?	YES	Check the wiring to the deck lifter drive motor if normal, replace the motor.
DC controller PCB			NO	Replace the DC controller PCB.

32. Pick-up fails. (cassette pick-up)

Cause	Step	Checks	YES/NO	Action
	1	Slide in and out the cassette. Is the sound of the lifter lowering and the lifter motor rotating heard?	NO	See "The lifter fails to move up."
Drive gear	2	Is the gear for drive attached properly?	NO	Attach the belt properly.
Upper right door, Lower right door	3	Are the upper right door and the lower right door closed properly?	NO	Close the doors properly.
Pressure spring	4	Are the upper right door and the lower right door locking the vertical path rollers 0, 1, 2, 3, and 4?	NO	Check the locking springs.
Vertical path roller 0 clutch (CL18), Vertical path roller 1 clutch (CL15), Vertical path roller 2 clutch (CL17), Vertical path roller 3 clutch (CL11), Vertical path roller 4 clutch (CL13)	5	Open the upper right door and the lower right door, and press the Copy Start key after inserting a screwdriver into the door switch. Do the vertical path rollers 0, 1, 2, 3, and 4 rotate?	NO	Check the wiring; if normal, replace the clutch.
Registration roller drive clutch	6	Is the leading edge of copy paper as far as the registration roller assembly?	YES	See "The registration roller fails to operate."
Pick-up assembly	7	Open the upper right door and the lower right door, and press the Copy Start key while forcing a screwdriver inside the door switch. Does the feeding/separation roller rotate?	YES	Go to step 9.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>YES/NO</th><th>Action</th></tr>
<tr><td>Pick-up clutch</td><td rowspan="2">8</td><td rowspan="2">Set the tester range to 30 VDC, and connect the probes of the tester to the connectors on the DC controller PCB as shown. Does the voltage change from 24 to 0 V when the Copy Start key is pressed?
<table>
<tr><th>Cassette</th><th>Clutch</th><th>+</th><th>–</th></tr>
<tr><td>3</td><td>CL10</td><td>J117A-2</td><td>GND</td></tr>
<tr><td>4</td><td>CL12</td><td>J130A-2</td><td>GND</td></tr>
</table></td><td>YES</td><td>Check the wiring; if normal, replace the applicable clutch.</td></tr>
<tr><td>DC controller</td><td>NO</td><td>Replace the DC controller PCB.</td></tr>
<tr><td>Sensor</td><td rowspan="2">9</td><td rowspan="2">Check to find out which sensor has detected the jam using 'B-JAM' in service mode (*1*). Is the sensor normal?</td><td>NO</td><td>Check the wiring and the lever; if normal, replace the sensor.</td></tr>
<tr><td>Pick-up assembly</td><td>YES</td><td>Remove the pick-up assembly, and check the springs.</td></tr>
</table>

33. The lifter fails to move up. (cassette pick-up)

Cause	Step	Checks	YES/NO	Action
Cassette size detecting switch	1	Is the size of the cassette indicated on the message display?	NO	Check the cassette size detecting switch.
Gear, Lever	2	Slide out the cassette, and move up the lifter by hand. Does it move smoothly?	NO	Remove the pick-up assembly, and check the gear and the lever.
Latch assembly (cassette)	3	Is the movement of the latch assembly of the cassette grip normal?	NO	Install it properly.
Spring, Lever	4	Push up the pick-up roller releasing lever by a finger. Does the pick-up roller lower?	NO	Remove the pick-up assembly, and check the spring and the lever.
Lifter position sensor	5	Is the lifter sensor (PS31, PS25, PS28) normal?	NO	Check the lever and the wiring; if normal, replace the sensor.
Cassette 3 lifter motor (M14), Cassette 4 lifter motor (M15)	6	Connect the connector, and turn ON the power switch. Set the tester range to 30 VDC, and connect the – probe of the tester to GND and the + probe to the following. Does the voltage change from about 0 to 24 V when the cassette is inserted? M14: J119A-9 M15: J119A-11	YES	Remove the pick-up assembly, and check the gear; if normal, replace the motor.
DC controller PCB			NO	Replace the DC controller PCB.

34. Pick-up fails. (multifeeder)

Cause	Step	Checks	YES/NO	Action
Pick-up roller, Pickup/feeding roller, Separation roller	1	Is the orientation of the pick-up roller, pick-up/feeding roller, and separation roller correct?	NO	Re-install the applicable part.
Belt, Gear, Coupling	2	Is the drive of the main motor transmitted to the multifeeder pick-up assembly through the belt, gear, and coupling?	NO	Check the belt, gear, and coupling.
	3	Is the leading edge of copy paper as far as the registration roller?	YES	See "The registration roller fails to rotate."
DC controller PCB	4	Set the tester range to 30 VDC, and connect the probes to J115B-1 (+) and J115B-2 (–) on the DC controller PCB. Does the voltage change from 24 to 0 V when the multifeeder is selected and the Copy Start key is pressed?	NO	Replace the DC controller PCB.
Multifeeder pick-up clutch (CL7)	5		YES	Replace the multifeeder clutch (CL7).
Multifeeder pick-up solenoid (SL10)	6	Connect the probes of the tester to J115B-11 (+) and J115B-12 (–) on the DC controller PCB. Does the voltage change from about 0 to 24 and then to 0 V when the Copy Start key is pressed?	NO	Replace the multifeeder pick-up solenoid (SL10).
DC controller PCB			YES	Replace the DC controller

35. The vertical path roller fails to rotate.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>YES/NO</th><th>Action</th></tr>
<tr><td>Belt, Gear, Coupling</td><td>1</td><td>Is the drive from the pick-up motor (M2) transmitted to each vertical path roller through the belt, gear, and coupling?</td><td>NO</td><td>Install the belt, gear, and coupling properly.</td></tr>
<tr><td>Vertical path roller clutch</td><td rowspan="2">2</td><td rowspan="2">Connect the – probe of the tester to GND and the + probe to the following; does the voltage change from about 24 to 0 V when the roller starts to rotate?
<table>
<tr><td>Vertical path 0 drive clutch (CL18)</td><td>J115A-4</td></tr>
<tr><td>Vertical path 1 drive clutch (CL15)</td><td>J117A-15</td></tr>
<tr><td>Vertical path 2 drive clutch (CL17)</td><td>J121B-8</td></tr>
<tr><td>Vertical path 3 drive clutch (CL11)</td><td>J117B-2</td></tr>
<tr><td>Vertical path 4 drive clutch (CL13)</td><td>J130B-2</td></tr>
</table></td><td>YES</td><td>Replace the applicable clutch.</td></tr>
<tr><td>DC controller PCB</td><td>NO</td><td>Replace the DC controller PCB.</td></tr>
</table>

36. The registration roller fails to rotate.

Cause	Step	Checks	YES/NO	Action
Belt, Gear, Coupling	1	Is the drive from the main motor (M1) transmitted to the registration roller through the belt, gear, and coupling?	NO	Install the belt, gear, and coupling properly.
Registration paper sensor (PS23)	2	Is the registration paper sensor (PS23) normal?	NO	Replace PS23.
Registration roller drive clutch (CL9)	3	Connect the – probe of the tester to GND and the + probe to J108A-5. Does the voltage change from about 24 to 0 V when the registration roller starts to rotate?	YES	Replace CL9.
DC controller PCB			NO	Replace the DC controller PCB.

37. The scanner fails to rotate forward.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>YES/NO</th><th>Action</th></tr>
<tr><td>Cable</td><td>1</td><td>Is the scanner drive cable routed correctly?</td><td>NO</td><td>Route the cable correctly.</td></tr>
<tr><td>Scanner path</td><td>2</td><td>Is the scanner rail free of dirt, and does the scanner move smoothly when pushed by hand?</td><td>NO</td><td>Check the scanner rail for dirt and foreign object and look for an object that may come into contact with the scanner; as necessary, clean, oil, or repair.
Reference:
If the rail surface is soiled, clean with alcohol and apply a small amount of lubricant.</td></tr>
<tr><td>Scanner motor (M3)</td><td rowspan="2">3</td><td rowspan="2">Set the tester range to 12 VDC, and connect the probes of the tester to the following. Does the voltage change as indicated when the Copy Start key is pressed?
<table>
<tr><th></th><th>+</th><th>–</th><th>Voltage</th></tr>
<tr><td>M3ON</td><td>J112B-6</td><td>J112B-3</td><td>about 0V→5V</td></tr>
<tr><td>M3F/R</td><td>J112B-7</td><td>J112B-3</td><td>0V→about5V→0V</td></tr>
</table></td><td>YES</td><td>Replace the scanner. motor.</td></tr>
<tr><td>DC controller PCB</td><td>NO</td><td>Check the wiring from the DC controller PCB to the scanner motor; if normal, replace the DC controller.</td></tr>
</table>

38. The scanner fails to move in reverse.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>YES/NO</th><th>Action</th></tr>
<tr><td></td><td>1</td><td>Does the scanner move forward?</td><td>NO</td><td>See "The scanner fails to move forward."</td></tr>
<tr><td>DC controller PCB</td><td rowspan="2">2</td><td rowspan="2">Set the tester range to 12 VDC. Does the voltage between J112B-7 (+) and J112B-3 (–) on the scanner motor controller PCB change to about 5 V when the scanner has moved forward?</td><td>NO</td><td>Replace the DC controller PCB.</td></tr>
<tr><td>Scanner motor (M3)</td><td>YES</td><td>Check the wiring from the DC controller PCB to the scanner motor; if normal, replace the scanner motor.</td></tr>
</table>

39. The blank exposure lamp fails to turn ON.

Cause	Step	Checks	YES/NO	Action
DC controller PCB	1	Remove the blank exposure lamp, and connect the connector. Select 'BLANK' in service mode ($\boxed{*}\boxed{4}\boxed{*}$). Does the blank exposure lamp turn ON normally when the user mode key is pressed?	YES	Check the wiring from the blank exposure unit to the DC controller PCB; if normal, replace the DC controller PCB.
Blank exposure lamp	2	Replace the blank exposure lamp. Does it turn ON normally?	YES	End.
DC controller PCB			NO	Check the wiring from the blank exposure lamp to the DC controller PCB; if normal, replace the DC controller PCB.

40. The pre-exposure lamp fails to turn ON.

Cause	Step	Checks	YES/NO	Action
DC controller PCB	1	Set the tester range to 30 VDC. Does the voltage between J103B-2 (+) and GND on the DC controller PCB change from 24 to 0 V when the Copy Start key is pressed?	NO	Replace the DC controller PCB.
Pre-exposure lamp PCB			YES	Check the wiring from the DC controller PCB to the pre-exposure lamp PCB; if normal, replace the pre-exposure lamp PCB.

41. The pre-exposure lamp fails to turn ON.

Cause	Step	Checks	YES/NO	Action
Connector	1	Select 'SCAN LAMP' in service mode ($\boxed{*}\boxed{4}\boxed{*}$). Does the scanning lamp turn ON for 3 sec when the user mode key is pressed?	YES	Check the connector. (The connector may have poor contact.)
Lamp (LA1)	2	Is the scanning lamp (LA1) installed properly?	NO	Disconnect the power plug from the power outlet, and install the lamp properly.
Thermal fuse (FU1)	3	Disconnect the power plug from the power outlet, and remove the thermal fuse. Is there electrical continuity between both terminals of the thermal fuse?	NO	Replace the thermal fuse. Note: The lamp may have turned ON abnormally, the fuse may be mounted improperly, or the cooling fan may be malfunctioning. Make appropriate checks.
Lamp	4	Set the tester range to X1Ω. Disconnect the connector J4, and connect the probes to both terminals of the lamp. Does the index of the tester swing?	NO	Replace the lamp.
DC controller PCB	5	Set the tester range to 12 VDC. Does the voltage between J111B-8 (+) and J111B-5 (–) on the DC controller PCB change from about 5 to 0 V when the Copy Start key is pressed?	NO	Replace the DC controller PCB.
Lamp regulator (LR1)	6	Replace the lamp regulator. Is the problem corrected?	YES	End.
Wiring			NO	1. Check the AC harness from the power switch to the lamp regulator. 2. Check the DC harness from the DC controller PCB to the DC harness.

42. The hopper motor (M10) fails to operate.

Cause	Step	Checks	YES/NO	Action
	1	Execute 'HPPR_MTR' in service mode ([✱][4][✱]). Does the hopper motor rotate?	NO	Go to step 3.
Toner level detection PCB	2	Is the indication for bit 10 of 'PC002' in service mode ([✱][2][✱]) '0', indicating the absence of toner?	YES	If the developing assembly is full of toner, replace the toner level detection PCB.
DC controller PCB	3	Execute 'HPPR-MTR' in service mode ([✱][4][✱]) to operate the hopper motor. Does the voltage between J05A-1 (+) and J105A-2 (–) on the DC controller PCB change from 24 to about 0 V?	NO	Replace the DC controller PCB.
J770, J719	4	Is the connection of the relay connector J770 and J719 secure?	NO	Connect them properly.

43. The hopper motor (M11) fails to operate.

Cause	Step	Checks	YES/NO	Action
	1	Execute 'HPPR_MTR' in service mode (✱4✱). Does the hopper motor rotate?	NO	Go to step 3.
Toner level detection PCB	2	Is the indication for bit 10 of 'PC002' in service mode (✱2✱) '0', indicating the absence of toner?	YES	If the developing assembly is full of toner, replace the toner level detection PCB.
DC controller PCB	3	Execute 'HPPR-MTR' in service mode (✱4✱) to operate the hopper motor. Does the voltage between J105A-3 (+) and J105A-4 (–) on the DC controller PCB change to about 0 V?	NO	Replace the DC controller PCB.
J770, J719	4	Is the connection of the relay connector J770 and J720 secure?	NO	Connect them securely.

44. The drum heater fails to operate

Cause	Step	Checks	YES/NO	Action
	1	Open the front door, and release the fixing feeding assembly. Are the ends of the drum warm? (Do not touch the surface of the drum.)	YES	The drum heater is operating.
DC controller PCB	2	Set the tester range to 12 VDC, and connect the probes of the tester to J120B-2 (+) and J120B-1 (–) on the DC controller PCB. Is the voltage between the terminals 5 V during copying and 0 V during standby?	NO	Replace the DC controller PCB.
J7	3	Is the connection of the relay connector J7 secure?	NO	Connect it securely.
AC driver	4	Replace the AC driver. Is the problem corrected?	YES	End.
Drum heater (H3)	5	Remove the drum, and set the tester range to x1Ω. Does the index of the tester swing when the probes of the tester are connected to both terminals of the heater?	NO	Replace the drum heater.
Drum heater controller PCB			YES	Replace the drum heater controller PCB.

45. The lens fails to move.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>YES/NO</th><th>Action</th></tr>
<tr><td>Rail</td><td>1</td><td>Turn OFF the power switch, and disconnect the power plug from the outlet. Does the lens move smoothly when the lens motor pulley is turned by hand?</td><td>NO</td><td>Check the rail for foreign object and dirt.</td></tr>
<tr><td>Drive belt</td><td>2</td><td>Is the drive belt installed properly?</td><td>NO</td><td>Install the drive belt properly.</td></tr>
<tr><td>DC power supply</td><td>3</td><td>Set the tester range to 30 VDC, and connect the probes to J305-1 (+) and J305-2 (–) on the DC controller PCB. Is DC power 24 VU present?</td><td>NO</td><td>See "DC power is absent."</td></tr>
<tr><td>DC controller PCB</td><td rowspan="2">4</td><td rowspan="2">Set the tester range to 200Ω, and connect the probes of the tester to the following connectors of the lens motor. Is the resistance between connectors as indicated?
<table>
<tr><th>Motor</th><th>+</th><th>–</th><th>Resistance</th></tr>
<tr><td>X motor (M4)</td><td>J110A-1</td><td>J110A-2</td><td>135Ω (approx.)</td></tr>
<tr><td></td><td>J110A-4</td><td>J110A-5</td><td></td></tr>
<tr><td></td><td>J110A-1</td><td>J110A-3</td><td>48Ω (approx.)</td></tr>
<tr><td></td><td>J110A-2</td><td>J110A-3</td><td></td></tr>
<tr><td></td><td>J110A-4</td><td>J110A-3</td><td></td></tr>
<tr><td></td><td>J110A-5</td><td>J110A-3</td><td></td></tr>
<tr><td>Y motor (M5)</td><td>J110A-10</td><td>J110A-11</td><td>135Ω (approx.)</td></tr>
<tr><td></td><td>J110A-13</td><td>J110A-14</td><td></td></tr>
<tr><td></td><td>J110A-10</td><td>J110A-12</td><td>48Ω (approx.)</td></tr>
<tr><td></td><td>J110A-11</td><td>J110A-12</td><td></td></tr>
<tr><td></td><td>J110A-13</td><td>J110A-12</td><td></td></tr>
<tr><td></td><td>J110A-14</td><td>J110A-12</td><td></td></tr>
</table>
</td><td>YES</td><td>Replace the DC controller PCB.</td></tr>
<tr><td>Lens motor (M4, M5)</td><td>NO</td><td>Replace the lens motor.</td></tr>
</table>

46. The Add Toner indicator fails to turn ON.

Cause	Step	Checks	YES/NO	Action
	1	Is toner in the hopper assembly?	YES	Go to step 3.
Toner sensor (hopper assembly), DC controller PCB	2	Select 'PC002' in service mode (✱2✱). Move the toner around the toner sensor (TS1) so that the sensor is exposed. At this time, is the indication for bit 10 on the message display '0', indicating the absence of toner?	NO	1. Replace TS1. 2. Replace the DC controller PCB.
DC controller PCB, Control panel			YES	1. Replace the DC control. 2. Replace the control panel.
	3	Open the upper cover of the developing assembly. Is the toner level sensor covered by toner?	YES	End.

47. The Add Toner message fails to turn OFF.

Cause	Step	Checks	YES/NO	Action
Toner	1	Is toner present at the rear of the hopper?	NO	The amount of toner inside the hopper is too little. Supply toner.
Toner sensor (TS1)	2	Select 'PC002' in service mode (✱2✱). At this time, is the indication for bit 10 on the message display '0', indicating the absence of toner?	YES	Replace the toner sensor (TS1) in the hopper assembly.
DC controller PCB, Control panel			NO	1. Replace the DC controller PCB. 2. Replace the control panel.

48. The Control Card Set indicator fails to turn ON.

Cause	Step	Checks	YES/NO	Action
CC-V	1	Can copies be made without a control card?	YES	Check to see if the connector of the CC-V is shorted.
Control panel	2	Replace the control panel. Does the indicator turn ON?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

49. The Control Card Set indicator fails to turn OFF.

Cause	Step	Checks	YES/NO	Action
Control card	1	Is the control card inserted properly?	NO	Insert it properly.
DC controller PCB	2	Can copies be made?	NO	Replace the DC controller PCB.
CC-V			YES	Replace the CC-V.

50. Paper jams at the fixing assembly inlet.

Cause	Step	Checks	YES/NO	Action
Coupling (fixing waste toner drive assembly)	1	Is the parallel pin groove of the coupling worn, hindering the movement of the coupling?	YES	Apply lubricant to the affected area of the coupling.

51. The Add Paper indicator fails to turn OFF.

Cause	Step	Checks	YES/NO	Action
Cassette pick-up assembly	1	Is the meshing between the teeth of the output gear of the lifter motor and the teeth of the cassette pick-up assembly faulty?	YES	Using the appropriate tool, install the lifter motor properly; or, replace the lifter motor and the cassette pick-up assembly at the same time.

52. The fixing heater fails to turn ON.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>YES/NO</th><th>Action</th></tr>
<tr><td>Thermal switch (TP1)</td><td>1</td><td>Slide out the fixing assembly, and connect the probes of the meter to both terminals of the thermal switch (TP1). Is there electric continuity?</td><td>NO</td><td>Replace the thermal switch.</td></tr>
<tr><td>Fixing heater (H1, H2)</td><td>2</td><td>Slide out the fixing unit, and connect the probes of the meter to both terminals of the fixing heater (H1, H2). Is there electric continuity?</td><td>NO</td><td>Replace the fixing heater.</td></tr>
<tr><td>AC driver PCB</td><td rowspan="2">3</td><td rowspan="2">Is voltage between the following connectors on the DC controller PCB 5 V?<table><tr><th>Heater</th><th>(+)</th><th>(-)</th></tr><tr><td>Main heater (H1)</td><td>J102B-5</td><td>J102B-1</td></tr><tr><td>Sub heater (H2)</td><td>J102B-3</td><td>J102B-1</td></tr></table></td><td>YES</td><td>Replace the AC driver PCB.</td></tr>
<tr><td>DC controller PCB</td><td>NO</td><td>Replace the DC controller PCB.</td></tr>
</table>

V. TROUBLESHOOTING FEEDING PROBLEMS

A. Copy Paper Jams

The machine may be divided into the following blocks in reference to location of jams:

① Pick-up assembly
② Separation/feeding assembly
③ Fixing/feeding assembly
④ Drum cleaner assembly
⑤ Holding tray assembly
⑥ Feeding assembly

The descriptions herein about how to remove jams therefore are given according to location.

The machine allows checks on the location and the type of jam in its service mode (B_JAM; [✱][1][✱] ; for as many as eight most recent jams).

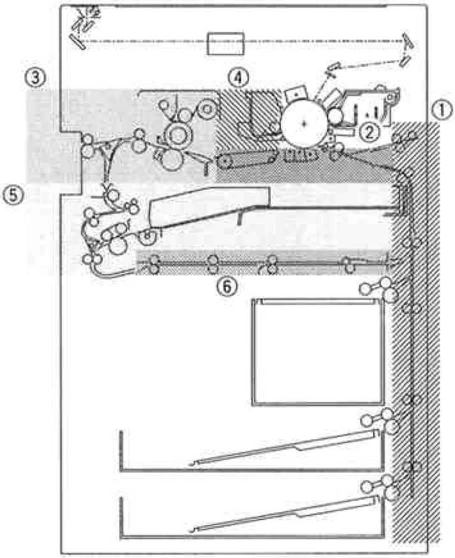


Figure 10-501

1. Pick-up assembly

Cause	Step	Checks	YES/NO	Action
Copy paper	1	Is the copy paper curled or wavy?	YES	Replace the copy paper. Advise the user on the correct method of storing paper.
	2	Try Canon-recommended paper. Is the problem corrected?	YES	Advise the user to use recommended paper.
DC controller PCB, Pick-up clutch	3	Does the pick-up roller of the selected cassette/tray rotate during copying operation?	NO	See "Pick-up fails."
Pick-up roller	4	Is the pick-up roller deformed or worn?	YES	Replace the pick-up roller.
Guide plate			NO	Check the guide plate for deformation.

2. Separation/feeding assembly

Cause	Step	Checks	YES/NO	Action
Copy paper	1	Has the leading edge of copy paper moved past the registration roller?	YES	Go to step 5.
Registration roller	2	Is the coupling of the registration roller correctly joined?	NO	Install the fixing/feeding unit correctly.
	3	Is the registration roller worn, deformed, or soiled?	YES	If soiled, clean it with alcohol; if worn or deformed, replace it.
	4	Is the roller retaining spring on both ends of the registration roller installed correctly?	NO	Install them correctly.
			YES	Check the transfer guide for foreign matter and deformation.
Registration clutch	5	Does the registration clutch operate normally?	NO	Check the registration clutch.
Transfer/ separation charging assembly	6	Is the transfer/separation charging assembly installed correctly?	YES	Check the transfer/separation charging assembly.
	7	Are there burrs on the paper guide of the transfer/separation charging assembly?	YES	Remove the burrs.
Copy paper	8	Try Canon-recommended paper. Is the problem corrected?	YES	Advise the user to use recommended paper.
Separation claw (cleaner assembly)	9	Is the separation claw under the cleaner assembly damaged?	YES	Replace the separation claw.
Feeding belt	10	Are the two feeding belts rotating properly?	NO	Check the belt and the pulley.
Feeding fan			YES	Check the feeding fan to see if it is operating.

3. Fixing/delivery assembly

Cause		Step	Checks	YES/NO	Action
Delivery assembly separation claw		1	Is the separation claw worn or deformed?	YES	1. Replace the separation claw. 2. If soiled, clean it with solvent.
Fixing assembly	Upper/lower roller	2	Is the paper guide soiled with toner?	YES	Replace the roller.
	Paper guide	3	Is the upper/lower roller deformed or scratched?	YES	Clean it with solvent.
		4	Is the height (position) of the paper guide correct?	NO	Adjust it.
	Nip	5	Is the lower roller pressure (nip) within specification?	NO	Adjust it.
	Cleaning belt	6	Is the cleaning belt taken up properly?	NO	Check the fixing assembly cleaner assembly.
Delivery assembly	Lever sensor	7	Does each sensor lever move smoothly?	NO	Adjust it so that it moves smoothly.
	Delivery sensor	8	Are the external delivery sensor (PS10) and the fixing assembly outlet sensor (PS47) normal?	NO	Replace the sensor(s).
	Delivery deflecting plate	9	Is the delivery deflecting plate oriented in the direction of delivery?	NO	Correct the orientation of the delivery deflecting plate.
	Delivery roller drive assembly	10	Does the delivery roller move smoothly?	NO	Check the delivery roller drive assembly.
Leading edge margin				YES	Check to make sure that there is a margin along the leading edge of the copy.

4. Fixing/delivery assembly (reversal delivery)

Cause	Step	Checks	YES/NO	Action
Internal delivery sensor (PS12)	1	Is the internal delivery sensor (PS12) normal?	NO	Replace the sensor.
Delivery paper deflecting solenoid (SL2)	2	Does the delivery paper deflecting plate move properly?	NO	Adjust the position of the delivery paper deflecting plate solenoid, or replace the solenoid.
Holding tray forward clutch (CL5)	3	Does the holding tray inlet roller rotate clockwise initially?	NO	Replace the holding tray forward clutch (CL5).
Holding tray reversing clutch (CL4)	4	Does the holding tray inlet roller start to reverse at the correct timing?	NO	Replace the holding tray reversing clutch (CL4).

5. Cleaning assembly

Cause	Step	Checks	YES/NO	Action
Transfer/ separation charging assembly, Pre-transfer charging assembly	1	Are the transfer/separation charging assembly and the pre-transfer charging assembly installed securely?	NO	Install the transfer/separation charging assembly and the pre-transfer charging assembly securely.
	2	Is the height of the charging wire as specified?	NO	Adjust the height of the charging wire.
Separation claw (cleaner assembly)	3	Is the separation claw under the cleaner assembly damaged?	YES	Replace the separation claw.
Copy paper	4	Try Canon-recommended paper. Is the problem corrected?	YES	Advise the user to use recommended paper.
High-voltage transformer, DC controller PCB			NO	1. Check the high-voltage transformer. 2. Check the DC controller PCB.

6. Holding tray assembly (copying on 1st side of two-sided/overlay copy)

Cause	Step	Checks	YES/NO	Action
	1	Perform steps 1 through 3 of 4. "Fixing/delivery assembly." Is the problem corrected?	YES	End.
Holding tray inlet paper sensor (PS15)	2	Is the holding tray inlet paper sensor (PS15) normal?	NO	Replace PS15.

7. Holding tray assembly (re-pick up)

Cause	Step	Checks	YES/NO	Action
Holding tray separation clutch (CL6)	1	Is the holding tray separation clutch (CL6) normal?	NO	Replace the CL6.
Holding tray re-pick up roller solenoid (SL6)	2	Is the holding tray re-pick up roller rotating?	NO	Replace SL6.
Holding tray pick-up sensor (PS17)	3	Is the holding tray pick-up sensor (PS17) normal?	NO	Replace PS17.
Holding tray registration clutch (CL3)	4	Is the holding tray registration clutch (CL3) normal?	NO	Replace CL3.
Holding tray registration sensor (PS14)	5	Is the holding tray registration sensor (PS14) normal?	NO	Replace PS14.
Holding tray weight solenoid (SL7)	6	Is the holding tray weight plate operating?	NO	Replace SL7.

8. Holding tray assembly (overlay re-pick up)

Cause	Step	Checks	YES/NO	Action
	1	Perform the items under 7. "Holding tray assembly (re-pick-up)." Is the problem corrected?	YES	End.
Holding tray paper deflecting plate	2	Is the holding tray paper deflecting plate warped or scratched?	YES	Replace the paper deflecting plate.
Holding tray paper deflecting plate solenoid (SL8)	3	Does the holding tray paper deflecting plate start to operate at the correct timing?	NO	Replace SL8.
Holding tray reversing clutch (CL4)	4	Does the roller switch from clockwise to counterclockwise rotation at the correct timing?	NO	Check the wiring from the DC controller PCB to the holding tray reversing clutch (CL4); if normal, replace CL4.

9. Holding tray feeding assembly

Cause	Step	Checks	YES/NO	Action
	1	Is the holding tray feeding assembly installed correctly?	NO	Install it correctly.
Holding tray feeding clutch (CL1), Holding tray feeding clutch (CL2)	2	Is the paper inside the holding tray feeding assembly moving properly?	NO	Replace CL1 or CL2.
Holding tray feeding assembly 1 paper sensor (PS8), Holding tray feeding assembly 2 paper sensor (PS9)	3	Are the holding tray feeding 1 paper sensor (PS8) and the holding tray feeding 2 paper sensor (PS9) normal?	NO	Replace PS8 or PS9.

B. Feeding Failure

1. Double feeding

Cause	Step	Checks	YES/NO	Action
Separation roller	1	Is the separation roller deformed or worn?	YES	Replace the separation roller.
Spring			NO	Replace the spring used to pull the separation roller.

2. Wrinkling

Cause		Step	Checks	YES/NO	Action
Pick-up assembly		1	Turn OFF the power while copy paper is moving through the feeding assembly. Is the paper wrinkled? Or is it moving askew?	YES	Check the pick-up assembly. Check the registration roller.
Copy paper		2	Try fresh copy paper. Is the problem corrected?	YES	The paper may be moist. Advise the user on the correct method of storage.
		3	Try Canon-recommended paper. Is the problem corrected?	NO	Advise the user to use recommended paper.
Fixing assembly	Paper guide	4	Is the paper guide soiled with toner or foreign matter?	YES	Clean it with solvent.
		5	Is the height (position) of the paper guide correct?	NO	Adjust the height (position) of the paper guide.
	Lower roller pressure	6	Is the lower roller pressure (nip) within specification?	NO	Adjust it.
	Upper/lower roller pressure			YES	Try replacing the upper and lower rollers one after the other.

VI. ARRANGEMENT/FUNCTIONS OF THE ELECTRICAL PARTS

A. Sensors

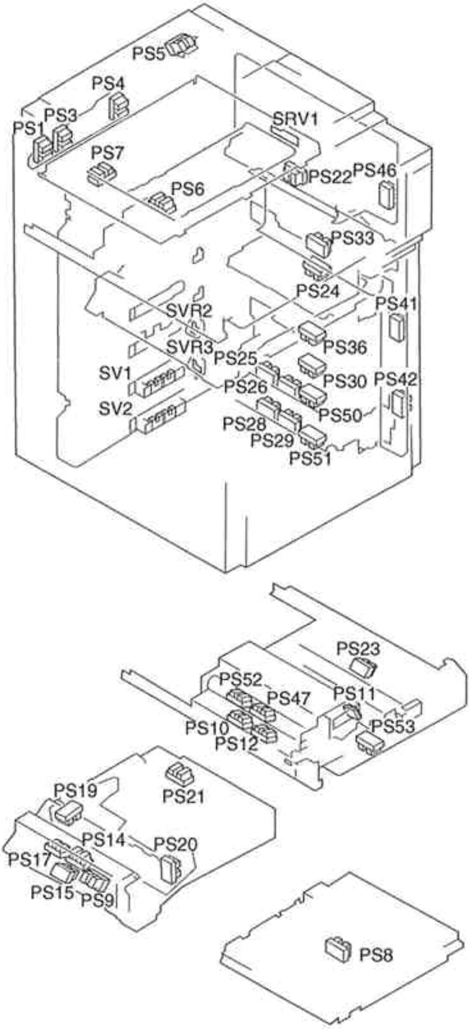

PS5
PS4
PS3
PS1
SRV1
PS7
PS22
PS46
PS6
PS33
PS24
PS41
SVR2
SVR3
PS36
PS25
SV1
PS30
PS42
PS26
SV2
PS50
PS28
PS29
PS51
PS23
PS52
PS47
PS11
PS53
PS10
PS12
PS19
PS21
PS14
PS20
PS17
PS15
PS9
PS8

Figure 10-601

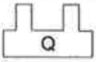
Symbol	Name	Notation	Function
	Photointerrupter	PS1	Scanner home position detection
		PS3	Scanner original leading edge 1 detection
		PS5	Copyboard cover open/closed detection
		PS6	Lens X home position detection
		PS7	Lens Y home position detection
		PS8	Holding tray feeding assembly 1 paper detection
		PS9	Holding tray feeding assembly 2 paper detection
		PS10	External delivery paper detection
		PS11	Fixing cleaning belt length detection
		PS12	Internal delivery assembly paper detection
		PS14	Holding tray registration paper detection
		PS15	Holding tray inlet paper detection
		PS17	Holding tray pick-up detection
		PS19	Holding tray re-circulating bar home position detection
		PS20	Holding tray Y home position detection
		PS21	Holding tray X home position detection
		PS22	Multifeeder pick-up detection
		PS23	Registration paper detection
		PS24	Pick-up vertical path 0 paper detection
		PS25	Cassette 3 lifter detection
		PS26	Cassette 3 paper detection
		PS27	Pick-up vertical path 3 paper detection
		PS28	Cassette 4 lifter detection
		PS29	Cassette 4 paper detection
		PS30	Pick-up vertical path 4 paper detection
		PS33	Pick-up vertical path 1 paper detection
		PS36	Pick-up vertical path 2 paper detection
		PS41	Upper right door open detection
		PS42	Lower right door open detection
		PS46	Multifeeder door open detection
		PS47	Fixing assembly outlet paper detection
		PS50	Cassette 3 open/closed detection
		PS51	Cassette 4 open/closed detection
		PS52	Claw jam detection
		PS53	Fixing/feeding unit detection
		SV1	Cassette 3 paper length detection
		SV2	Cassette 4 paper length detection
	Variable resistor	SVR1	Multifeeder paper width detection
		SVR2	Cassette 3 paper width detection
		SVR3	Cassette 4 paper width detection

Table 10-601

Paper Deck

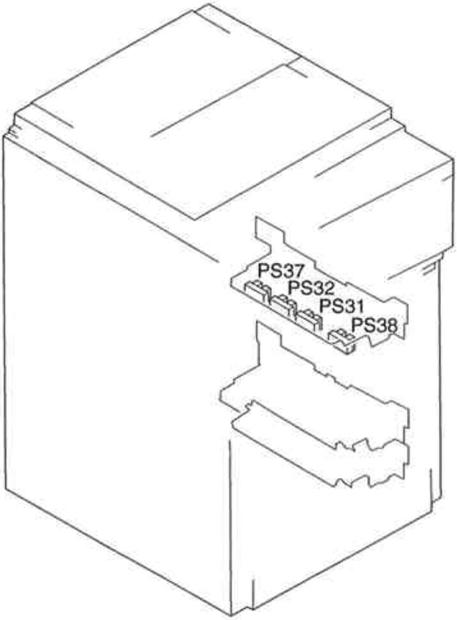

PS37
PS32
PS31
PS38

Figure 10-602

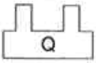
Symbol	Name	Notation	Function
	Photointerrupter	PS31	Deck lifter position detection
		PS32	Deck paper detection
		PS37	Deck lifter limit detection
		PS38	Deck open/closed detection

Table 10-602

B. Switches and Solenoids

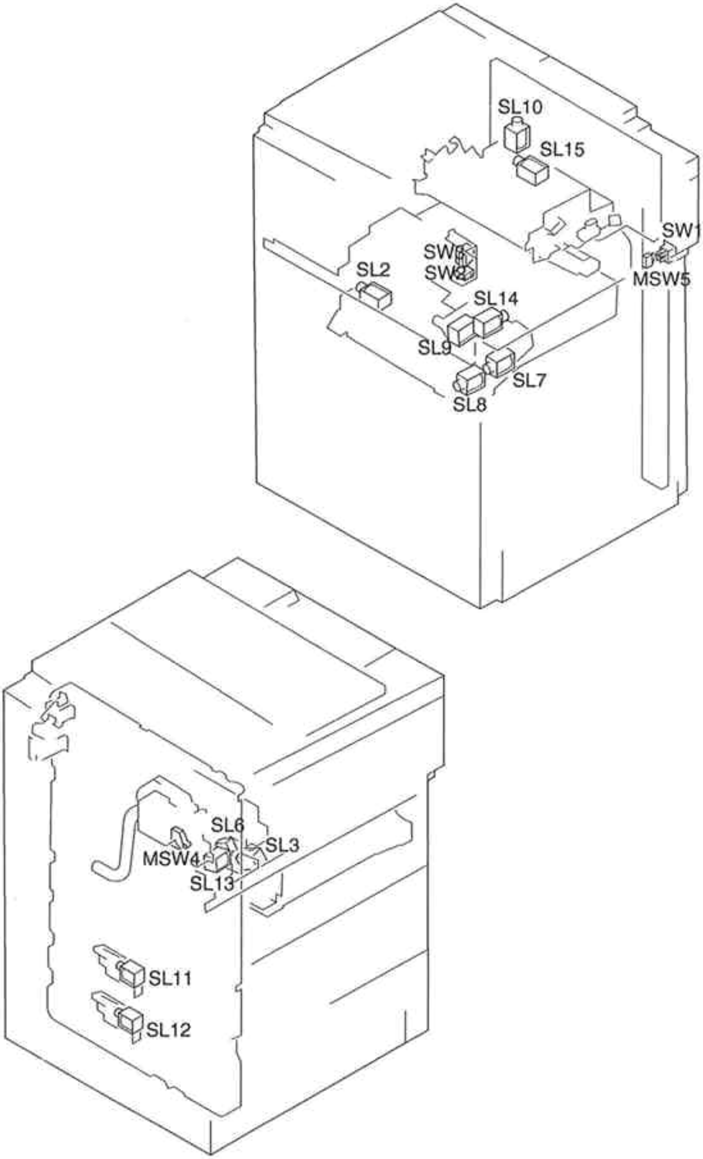

SL10
SL15
SW1
MSW5
SW6
SW8
SL2
SL14
SL9
SL7
SL8
SL6
SL3
MSW4
SL13
SL11
SL12

Figure 10-603

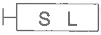
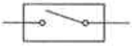
Symbol	Name	Notation	Function
	Solenoid	SL2	Drives the delivery paper deflecting plate.
		SL3	Drives the fixing assembly.
		SL6	Drives the holding tray re-pick up roller (D-cut roller).
		SL7	Drives the holding tray weight.
		SL8	Drives the holding tray paper deflecting plate.
		SL9	Moves the holding tray.
		SL10	Drives multifeeder pick-up.
		SL11	Releases the cassette 3 pick-up roller.
		SL12	Releases the cassette 4 pick-up roller.
		SL13	Locks the fixing/feeding unit.
		SL14	Drives the cleaning belt.
		SL15	Relays drive for multifeeder pick-up.
		SL16	Drives the fixing assembly inlet guide.
	Microswitch/switch	MSW4	Detects the locked state of the waste toner feeding screw.
		MSW5	High-voltage multifeeder door switch
		SW1	Power switch
		SW2	Door switch
		SW3	Drum heater switch

Table 10-603

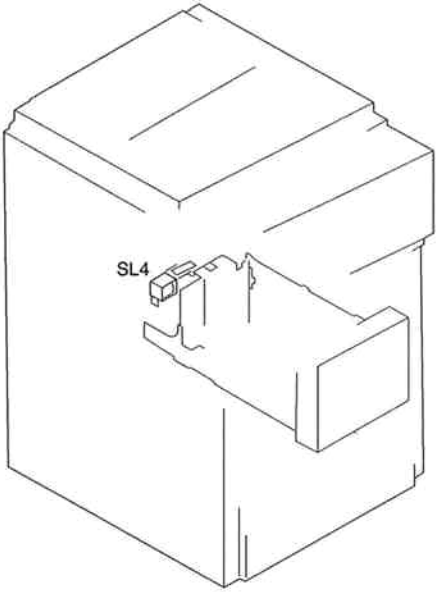


Figure 10-604

Symbol	Name	Notation	Function
S L	Solenoid	SL4	Releases the deck pick-up roller.

Table 10-604

C. Motors and Fans

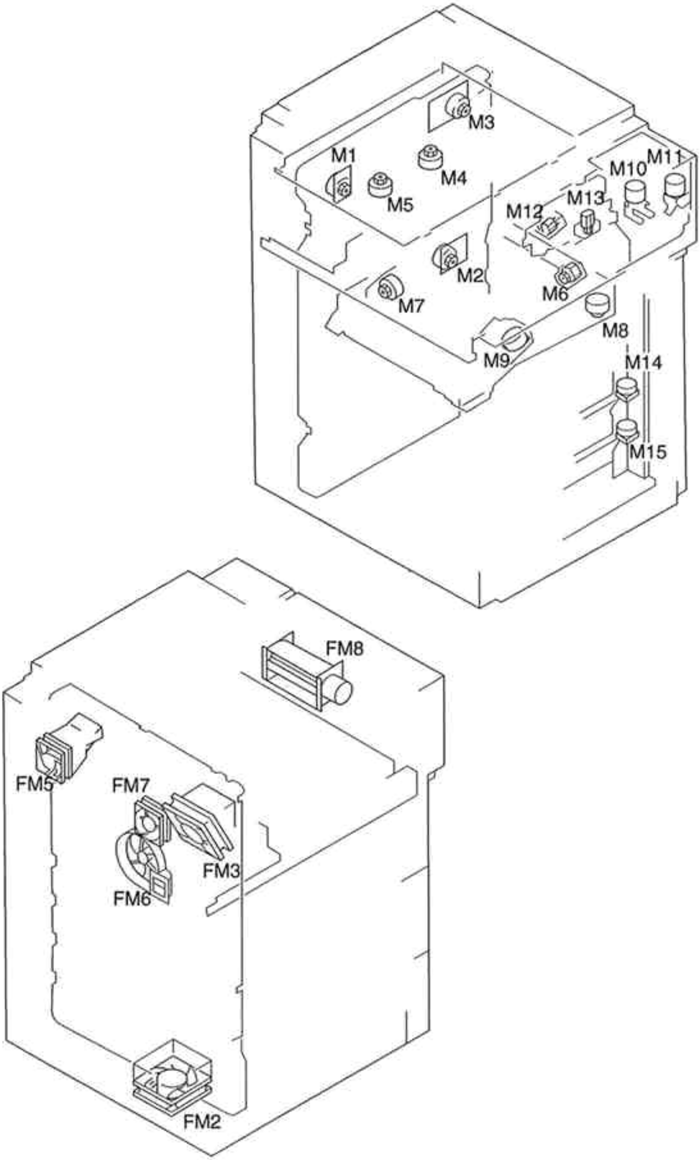

M3
M1
M4
M10
M11
M5
M13
M12
M2
M6
M7
M8
M9
M14
M15
FM8
FM5
FM7
FM3
FM6
FM2

Figure 10-605

Symbol	Name	Notation	Function
⊗	Fan	FM2	Exhaust fan
		FM3	Fixing assembly heat exhaust fan
		FM5	Developing fan
		FM6	Feeding fan
		FM7	Cleaner fan
		FM8	Scanner cooling fan
Ⓜ	Motor	M1	Main motor
		M2	Pick-up motor
		M3	Scanner motor
		M4	Lens X motor
		M5	Lens Y motor
		M6	Transfer/separation charging wire cleaner motor
		M7	Holding tray re-circulating bar motor
		M8	Holding tray X motor
		M9	Holding tray Y motor
		M10	Hopper motor (toner supply)
		M11	Hopper motor (toner stirring)
		M12	Primary charging wire cleaner motor
		M13	Pre-transfer charging wire cleaner motor
		M14	Cassette 3 lifter motor
		M15	Cassette 4 lifter motor

Table 10-605

D. Clutches

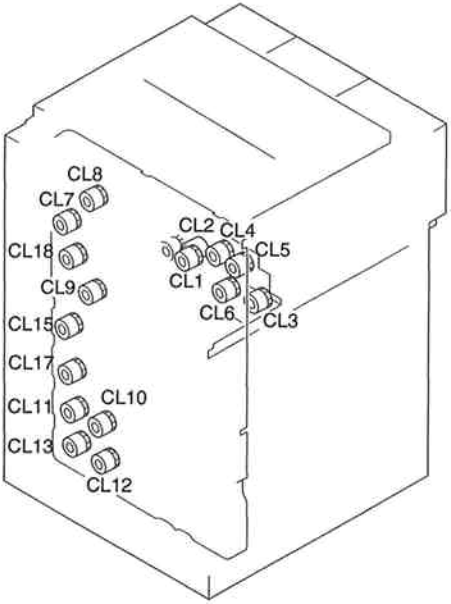


Figure 10-606

Symbol	Name	Notation	Function
CL	Clutch	CL1	Holding tray feeding 1
		CL2	Holding tray feeding 2
		CL3	Holding tray registration
		CL4	Holding tray reversal
		CL5	Holding tray forward
		CL6	Holding tray separation
		CL7	Multifeeder pick-up
		CL8	Development
		CL9	Registration roller drive
		CL10	Cassette 3 pick-up
		CL11	Vertical path roller 3 drive
		CL12	Cassette 4 pick-up
		CL13	Vertical path roller 4 drive
		CL15	Vertical path roller 1 drive
		CL17	Vertical path roller 2 drive
		CL18	Vertical path roller 0 drive

Table 10-606

Front Paper Deck

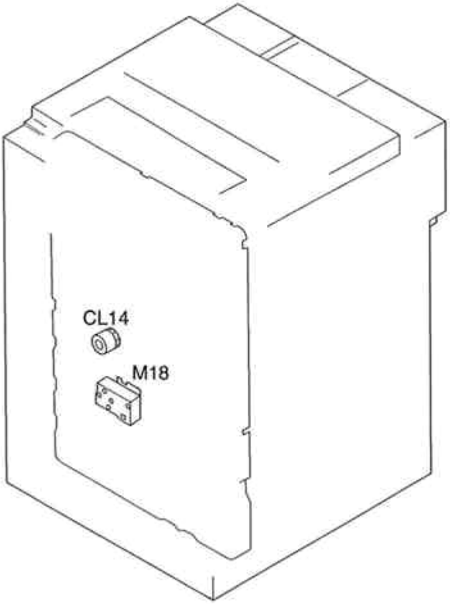


Figure 10-607

Symbol	Name	Notation	Function
M	Motor	M18	Deck lifter drive motor
CL	Clutch	CL14	Deck pick-up

Table 10-607

E. Lamps, Heaters, and Photosensors

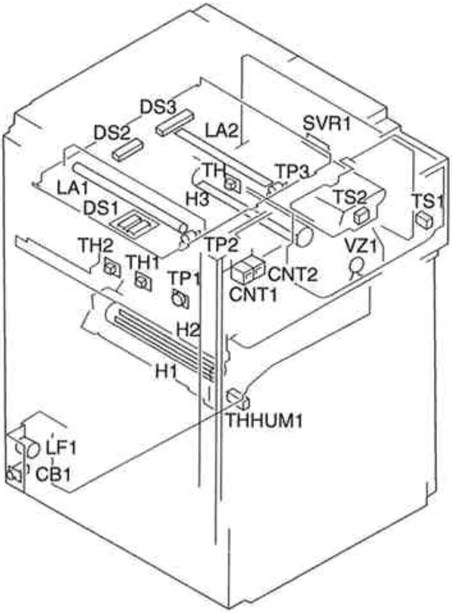

DS3
DS2
LA2
SVR1
TH
TP3
LA1
H3
TS2
TS1
DS1
TH2
TP2
VZ1
TH1
CNT2
TP1
CNT1
H2
H1
THHUM1
LF1
CB1

Figure 10-608

Symbol	Name	Notation	Function
C B	Circuit breaker	CB1	Circuit breaker
CNT	Counter	CNT1	Total counter
		CNT2	Option counter
	Photosensor	DS1	Original size 1 detection
		DS2	Original size 2 detection
		DS2	Original size 3 detection
	Heater	H1	Fixing main heater
		H2	Fixing sub heater
		H3	Drum heater
	Lamp	LA1	Scanning lamp
		LA2	Pre-exposure LED
L F	Line filter	LF1	Noise filter
	Variable resistor	SVR1	Multifeeder paper width detecting VR
	Thermistor	TH	Drum heater thermistor
		TH1	Fixing heater main thermistor
		TH2	Fixing heater sub thermistor
	Environment sensor	THHUM1	Temperature/humidity sensor (internal temperature sensor)
	Toner sensor	TS1	Hopper toner sensor
		TS2	Detecting assembly toner sensor
	Varistor	VZ1	Varistor
	Thermal switch	TP1	Fixing heater thermal switch
	Thermal fuse	TP2	Scanning lamp thermal fuse
		TP3	Drum heater thermal fuse

Table 10-608

F. PCBs

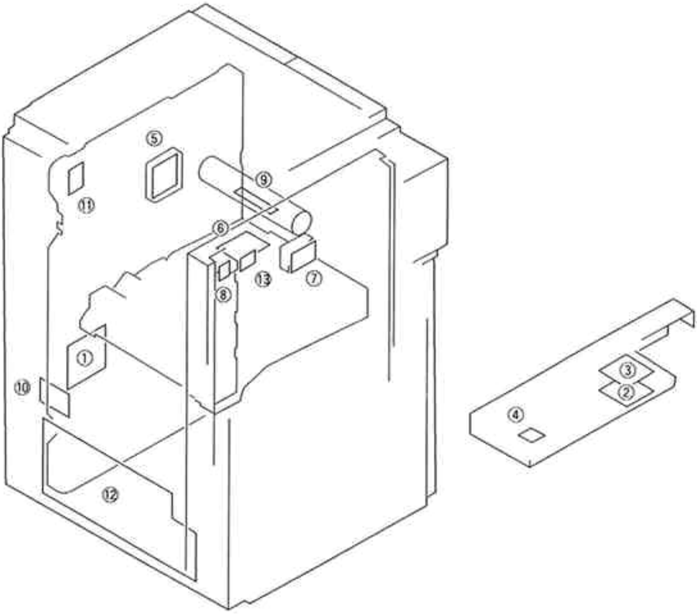

⑤
⑨
⑪
⑥
⑧
⑬
⑦
①
⑩
⑫
③
②
④

Figure 10-609

Ref.	Name	Description
①	DC controller PCB	Controls sequence.
②	Control panel CPU PCB	Controls the control panel.
③	Control pane key PCB	Receives key inputs from the control panel; Controls LED indications.
④	FL inverter PCB	Supplies power for the control panel backlight lamp.
⑤	HVT PCB	Generates high voltage.
⑥	Holding tray control PCB	Controls the holding tray sensors, solenoids, and clutches.
⑦	Potential control PCB	Controls the surface potential of the photosensitive drum.
⑧	Option counter PCB	Relays the counter signals for options.
⑨	Drum heater controller PCB	Controls the drum heater.
⑩	AC driver PCB	Controls the AC circuit.
⑪	Lamp regulator	Controls the scanning lamp.
⑫	DC power supply PCB	Supplies DC power.
⑬	Service switch PCB	Switches to service mode.

Table 10-609

G. Variable Resistors, Light-Emitting Diodes, and Check Pins by PCB

Of the variable resistors (VR), light-emitting diodes (LED), and check pins found, those that may be used in the field are discussed:

Caution:

1. Some LEDs emit dim light because of leak current when OFF; this is a normal condition and should be kept in mind.
2. VRs that may be used in the field............ ⊘

   VRs that must not be used in the field..... ▨

Caution:

Do not use VRs and check pins not given in the list; they are for the factory only and require special instruments and high precision.

1. DC Controls PCB

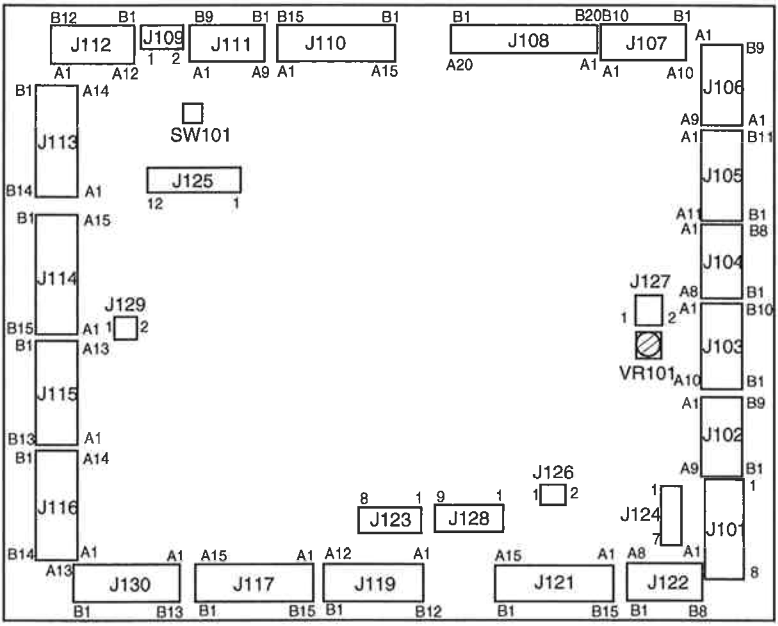

J112
J109
J111
J110
J108
J107
J106
J105
J104
J103
J102
J101
J113
J114
J115
J116
J125
J129
J127
J126
J123
J128
J124
J130
J117
J119
J121
J122
SW101
VR101

Figure 10-610

SW101-2	SW101-2	SW101*-3	No Trans.	Vertical size
OFF	OFF	—	100V	AB-configuration
OFF	ON	—	230V	AB/Inch-configuration
ON	OFF	—	230V	A-configuration
ON	ON	—	120V	Inch-configuration

Caution:
DIP SW101-3 on the DC controller PCB is for the factory; do not change the settings to avoid malfunction.

Table 10-610

AB-configuration (4R4E)	Ratio
200%	200.0%
A4→A3, B5→B4	141.1%
A4→B4	122.4%
B4→A3, B5→A4	115.4%
100%	100.0%
A3→B4, A4→B5	86.5%
B4→A4	81.6%
A3→A4, B4→B5	70.7%
50%	50.0%

Table 10-611

Inch-configuration (4R3E)	Ratio
200%	200.0%
LTR→11"×17"	129.4%
LGL→11"×17"	121.4%
100%	100.0%
LGL→LTR	78.6%
LGL→11"×17"	73.3%
11"×17→"LTR	64.7%
50%	50.0%

Table 10-612

A-configuration (2R2E)	Ratio
200%	200.0%
A4→A3	141.4%
100%	100.0%
A3→A4	70.7%
50%	50.0%

Table 10-613

AB/Inch-configuration (4R4E)	Ratio
200%	200.0%
A4/LTR→A3, B5→B4	141.4%
A4/LTR→B4	122.4%
B4→A3, B5→A4/LTR	115.4%
100%	100.0%
A3→B4, A4/LTR→B5	86.5%
B4→A4/LTR	81.6%
A3→A4/LTR, B4→B5	70.7%
50%	50.0%

Table 10-614

Connector	Description
J123	For factory
J125	For factory
J126	For factory
J129	For factory

Table 10-615

2. AC Driver PCB

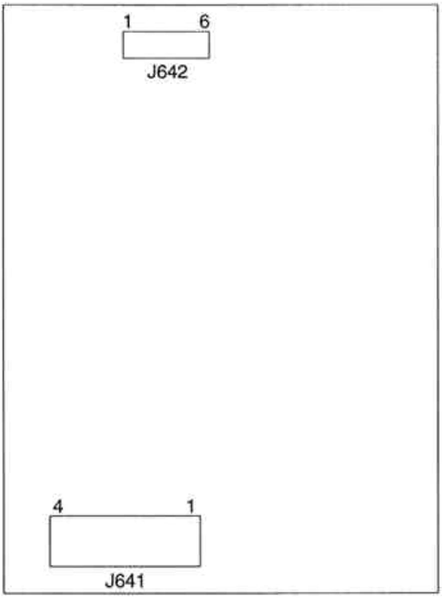

1
6
J642
4
1
J641

Figure 10-611

3. DC Power Supply PCB

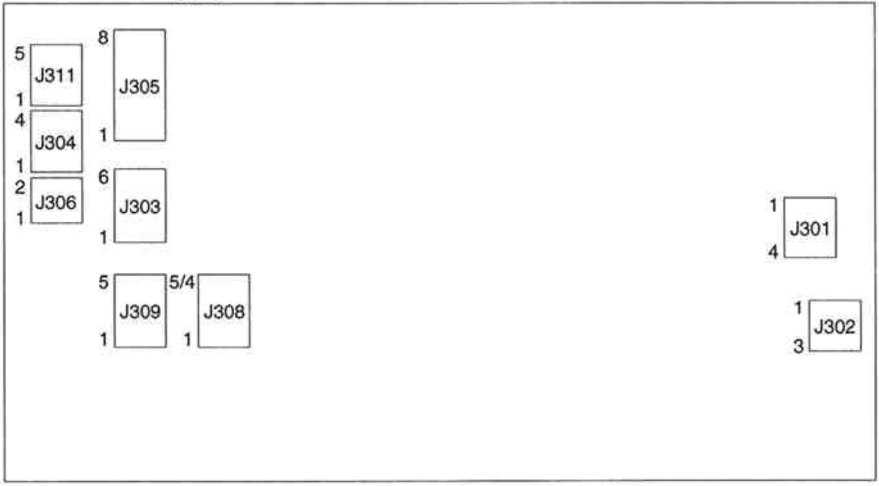

5
J311
1
4
J304
1
2
J306
1
8
J305
1
6
J303
1
5
J309
1
5/4
J308
1
1
J301
4
1
J302
3

Figure 10-612

4. Control CPU PCB

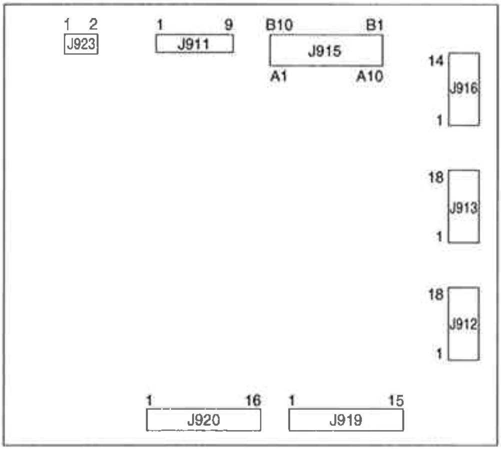

1
2
J923
1
9
J911
B10
B1
J915
A1
A10
14
J916
1
18
J913
1
18
J912
1
1
16
J920
1
15
J919

Figure 10-613

5. Holding Tray Driver PCB

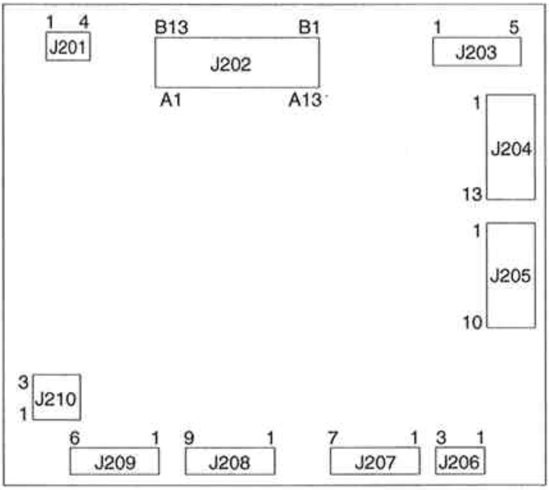

1
4
J201
B13
B1
J202
A1
A13
1
5
J203
1
J204
13
1
J205
10
3
J210
1
6
1
J209
9
1
J208
7
1
J207
3
1
J206

Figure 10-614

6. Potential Measurement PCB

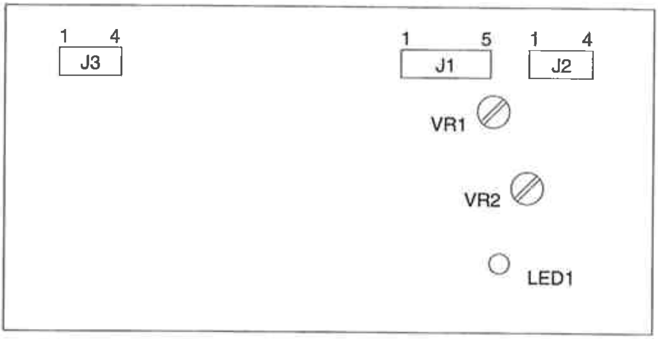


Figure 10-615

VR	Description
VR1	For factory
VR2	For factory

Table 10-616

LED	Description
LED1	Remains ON while measuring the surface potential of the drum.

Table 10-617

7. HVT1 PCB

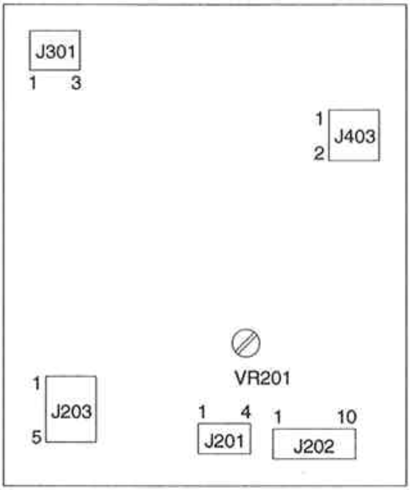

J301
1
3
1
J403
2
VR201
1
J203
5
1
4
J201
1
10
J202

Figure 10-616

VR	Description
VR201	For factory

Table 10-618

8. HVT2 PCB

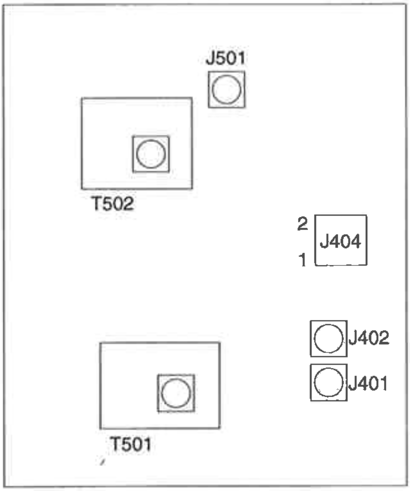

J501
T502
2
J404
1
J402
J401
T501

Figure 10-617

9. Inverter PCB

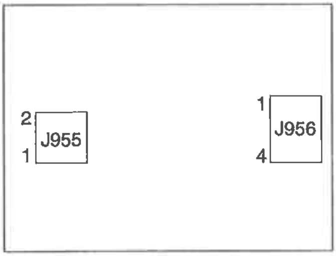

2
J955
1
1
J956
4

Figure 10-618

10. Lamp Regulator PCB

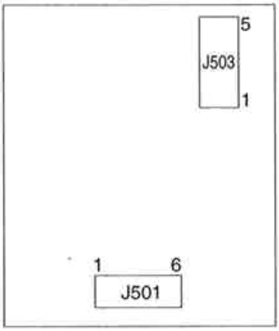


Figure 10-619

11. Counter PCB

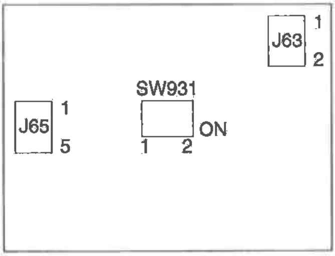


Figure 10-620

SW931-1	SW931-2	Mode
0	0	So that the sub counter is assumed to be not connected.
1	0	So that the sub counter is used as a small copy counter.
0	1	So that the sub counter is used as a two-sided copy counter.
1	1	So that the sub counter is used as a large-size copy counter.

Table 10-619

VII. SERVICE MODE

A. Outline

The machine's service mode is divided into the following six:

Item	Notation	Description
1	DISPLAY	Control/display mode
2	I/O DISPLAY	I/O display mode
3	ADJUST	Adjustment mode
4	FUNCTION	Function mode
5	OPTION	Optional settings mode
6	COUNTER	Counter mode

Table 10-701

Each mode has items which may be checked on the message display.

Reference:

When a specific mode is selected, the appropriate page number will be indicated in the upper right corner of the message display.

B. Using Service Mode

1) Open the front door, and insert a door switch actuator. If you want to make checks (e.g., I/O display mode) while making copies, set the appropriate copying mode.
2) Press the service mode key with a hex key.
   - '$' will be indicated in the upper right corner of the message display when service mode starts.
3) Enter the number of the mode (Table 10-701) using the ✱ key and the keypad.
   Ex.
   [✱]→[3]→[✱]
4) Press the ⏪/⏩ key to select the appropriate screen.
5) Make a check or adjustments.
   To accept the input data, press the user mode key (✱).
6) End service mode.
   - Press the Reset key (//) once to end the current mode.
   - Press the Reset key twice to end service mode.
   - Or, turn OFF the power switch or disconnect the power plug to end service mode.
   (Opening the front door or the pick-up assembly door will not end service mode.)

C. Using Adjustment Mode and Option Settings Mode

In adjustment mode or option settings mode, settings made on the control panel are stored in RAM on the DC controller PCB, thereby simulating operations executed by conventional VRs and SWs.

Table 10-702 shows the label attached behind the front door.

At the factory, each machine is adjusted, and the adjustment values are recorded on the label.

If you have replaced the DC controller PCB or initialized the RAM, you must enter the values recorded on the label.

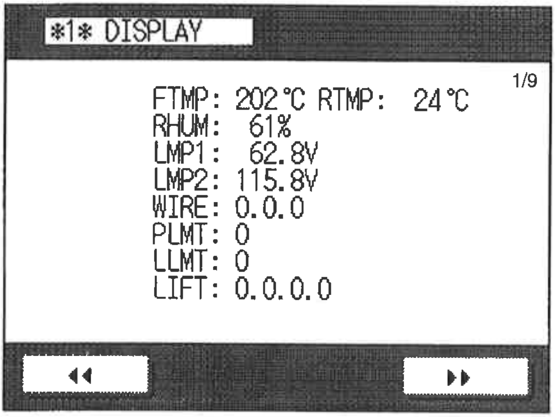
In addition, be sure to record any values you entered in the field on the label.

	TYP				TYP		
LIGHT_5				MF_A6R			
LIGHT_5P				MF_A4R			
AE_SLOP				MF_A4			
GLEAM_5				BOOK_ERA			
BRAKE_SC				ATM			
REGIST				DOC_ST			
LE_BLANK				P_INT_RVL			
F_BLANK				RFAE_F5L			
R_BLANK				REAE_F9L			
TE_BLANK				RFAE_F5R			
PRIMARY				RFAE_F9R			
BIAS				LA_LCKPS			
PRETRANS				LA_SPEED			
TRN_1				RF_LENSY			
TRN_DUP				11x17PSZ			
TRN_OVL				LGL_PSZ			
SEP_1				LTR_PSZ			
SEP_DUP				LTRR_PSZ			
SEP_OVL				STMT_PSZ			
C1_STMTR				A3_PSZ			
C1_A4R				A4_PSZ			
C2_STMTR				A4R_PSZ			
C2_A4R				A5_PSZ			
C3_STMTR				B4_PSZ			
C3_A4R				B5_PSZ			
C4_STMTR				B5R_PSZ			
C4_A4R							

Table 10-702

D. Control Display Mode (*1*)

Press the <</>> key to select the screen.



```
*1* DISPLAY
                                              1/9
FTMP: 202℃ RTMP:  24℃
RHUM:  61%
LMP1:  62.8V
LMP2: 115.8V
WIRE: 0.0.0
PLMT: 0
LLMT: 0
LIFT: 0.0.0.0
```

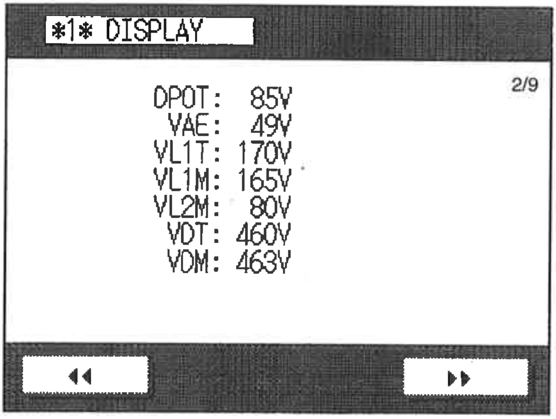
Screen 1-1

Item	Description	Remarks
FTMP	Indicates the surface temperature of the fixing roller. (output of the main thermistor TH1)	Unit: ˚C
RTMP	Indicates the machine internal temperature. (output of the thermal sensor on the DC controller PCB)	
RHUM	Indicates the machine internal humidity. (output of the humidity sensor on the DC controller PCB)	
LMP1	Indicates the ON voltage of the scanning lamp (100/120V model)	Unit: V
LMP2	Indicates the ON voltage of the scanning lamp. (230V model)	Unit: V
WIRE	Indicates a value other than '0' if the primary, pre-transfer, or transfer/separation charging wire cleaner stops at a point not its home position. Executing wiring cleaning for the appropriate wire in user mode will return the wire cleaner to its home position.	
PLMT	Indicates '1' when the current value reaches the upper limit or the lower limit during current control on the primary charging assembly.	1: Error 0: Normal
LLMT	Indicates '1' when the ON voltage of the scanning lamp reaches '1' and '2' if it reaches the lower limit.	0: Normal 1: Error 2: Error

Item	Description	Remarks
LIFT	Indicates '1' if the lifter position sensor does not turn ON within 8 sec after the lifter up command is issued for the paper deck/cassette lifter. Order of flags Deck, cassette 3, cassette 4	Resetting is by turning OFF and ON the power switch.

- LMP1 and LMP2 indicate the ON control voltage even when the scanning lamp is OFF.

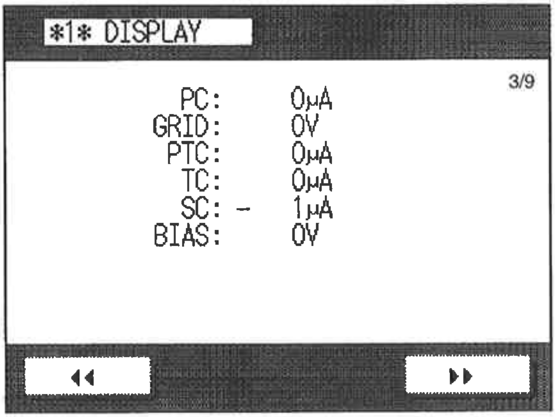
Note:
If '0' is indicated under 'WIRE', be sure to execute 'wire cleaning' in user mode (✻). If the wire cleaner motor and the wire cleaner unit are normal, executing wire cleaning will activate the cleaner unit, causing it to stop at home position and clearing the indication to '0'.
(Unless you execute wire cleaning, wire cleaning will remain prohibited and will not be reset by turning OFF/ON the power.)



DPOT: 85V
VAE: 49V
VL1T: 170V
VL1M: 165V
VL2M: 80V
VDT: 460V
VDM: 463V

Screen 1-2

Item	Description	Remarks
DPOT	Indicates the surface potential of the drum.	Unit: V
VAE	Indicates the average surface potential during AE measurement.	Unit: V
VL1T	Indicates the average surface potential during AE measurement.	Unit: V
VL1M	Indicates the measured value of VL1 (light area potential).	Unit: V
VL2M	Indicates the measured value of VL2 (light area potential for developing bias).	Unit: V
VDT	Indicates the target value of VD (dark area potential).	Unit: V
VDM	Indicates the measured value of VD (dark area potential).	Unit: V

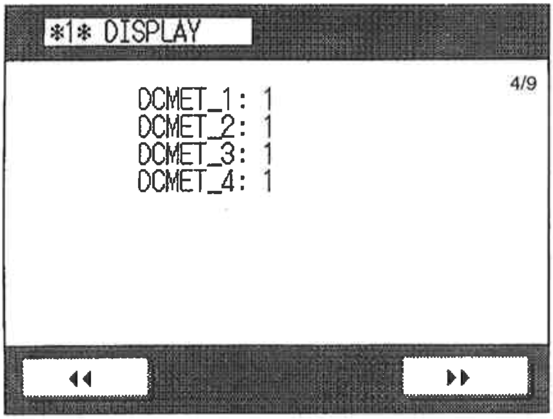


PC: 0μA
GRID: 0V
PTC: 0μA
TC: 0μA
SC: - 1μA
BIAS: 0V

Screen 1-3

Item	Description	Remarks
PC	Indicates the current value of the primary charging assembly.	
GRID	Indicates the current value of the grid of the primary charging assembly.	
PTC	Indicates the current value of the pre-transfer charging assembly.	
TC	Indicates the current value of the transfer charging assembly.	
SC	Indicates the current value of the separation charging assembly.	
BIAS	Indicates the DC value of the developing bias.	

- The indication will change to '0' when the HVT unit turns OFF.



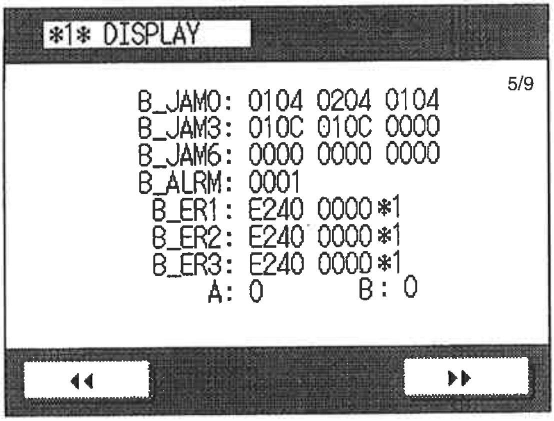
1 DISPLAY

4/9

DCMET_1 : 1
DCMET_2 : 1
DCMET_3 : 1
DCMET_4 : 1

Screen 1-4

Item	Description	Remarks
DCMET-1	Indicates the output of the original size sensor 1.	
DCMET-2	Indicates the output of the original size sensor 2.	
DCMET-3	Indicates the output of the original size sensor 3.	
DCMET-4	Indicates the output of the original size sensor 4.	



```
B_JAM0: 0104 0204 0104
B_JAM3: 010C 010C 0000
B_JAM6: 0000 0000 0000
B_ALRM: 0001
 B_ER1: E240 0000*1
 B_ER2: E240 0000*1
 B_ER3: E240 0000*1
     A: 0       B: 0
```

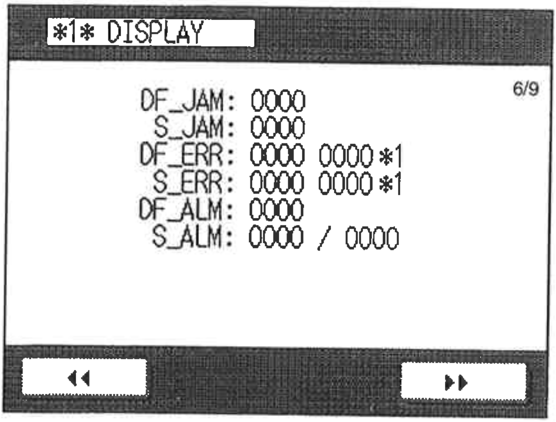
Screen 1-5

Item	Description	Remarks
B-JAM0	Indicates the location of the most recent jam and second most recent jam inside the copier.	See Table 10-703. (*3)
B-JAM3	Indicates the location of the third, fourth, and fifth most recent jams inside the copier.	See Table 10-703. (*3)
B-JAM6	Indicates the location of the sixth, seventh, and eighth most recent jams in the copier.	See Table 10-703. (*3)
B-ALRM *1	Note used.	
B-ER1 *2	Indicates the most recent self diagnosis code for the inside of the copier and the sorter (not RDF).	
B-ER2 *2	Indicates the second most recent diagnosis code of the inside of the copier and the sorter (not RDF).	
B-ER3 *2	Indicates the third most recent diagnosis code of the inside of the copier and the sorter (not RDF).	
A	Indicates the type of 'E002' (error occurring when the temperature of the fixing roller does not reach a specific value within a specific period of time).	1: 70 °C~100 °C 2: 100°C~150 °C
B	Indicates the type of 'E001'. (The temperature of the fixing roller exceeds a specific value.)	1: Main thermistor (TH1) 2: Sub thermistor (TH2)

*1: No data exists representing a copier alarm condition.

*2: The indication of the rightmost four bits of 'B-ER 1 through 3' will remain '0000', and no E code will be indicated.

*3: The jam code related to the RDF indicated under 'B-JAM' is '0700' only; for details, see the next screen 'DF-JAM'.



```
*1* DISPLAY
                                6/9
DF_JAM: 0000
 S_JAM: 0000
DF_ERR: 0000 0000*1
 S_ERR: 0000 0000*1
DF_ALM: 0000
 S_ALM: 0000 / 0000
```

Screen 1-6

Item	Description	Remarks
DF-JAM	Indicates the location of an RDF jam.	See Tables 10-707, -708, and -709.
S-JAM	Indicates the location of a jam in the sorter.	See Table 10-704.
DF-ERR *1	Indicates the nature of the results of self diagnosis in the RDF. (*2)	
S-ERR *1	Indicates the nature of the results of self diagnosis in the sorter. (*3)	
DF-ALM	Indicates the nature of an alarm for the RDF.	
S-ALM	Indicates the nature of an alarm in the sorter.	See Tables 10-705 and -706.

*1: The rightmost four bits of ‘DF-ERR’ and ‘S-ERR’ will remain ‘0000’, i.e., they will not change.

*2: For instance, if ‘E480’ is indicated,
DF-ERR: 8000 0000
‘4’ of ‘E480’ represents the RDF and is omitted for DF-ERR notation. (This, however, does not apply to ‘E400’.)

*3: For instance, if ‘E530’ is detected,
S-ERR: 3000 0000
‘5’ of ‘E530’ represents the sorter and is omitted for S-ERR notation. (This, however, does not apply to ‘E500’.)

High-order 2 digits

Display code	Jam location	Display code	Sensor name	Sensor No.
01	Delay jam	01	Pick-up vertical path 0	PS24
02	Stationary jam	02	Pick-up vertical path 1	PS33
03	Power-on jam	03	Pick-up vertical path 2	PS36
04 (*1)	Double feeding jam	04	Pick-up vertical path 3	PS27
05	Timing jam	05	Pick-up vertical path 4	PS30
06	Sorter-related jam	06	Holding tray pick-up	PS17
		07	Holding tray registration	PS14
		08	Holding tray feeding assembly 1	PS8
		09	Holding tray feeding assembly 2	PS9
		10	Fixing claw jam	PS52 (*3)
		0A	Registration	PS23
		0B	Holding tray inlet	PS15
		0C	Fixing assembly outlet	PS47
		0D	External delivery	PS10
		0E		
		0F	Internal delivery assembly	PS12 (*2)

To reset, open the front door, remove the jam, and close the front door.

*1: A double feeding jam location (low-order 2 digits) indication is '00' only; 01, 02 will not be displayed.

*2: Power-on jam only.

*3: Power-on jam and jam during initial rotation.

Table 10-703

Sorter Jam Code

Display code	Description
03	Feeding delay jam
04	Feeding stationary jam
07	Power-on jam
08	Door open jam (while feeding copy paper)
09	Door open jam (during stapling)
0A	Bin external sensor jam

Table 10-704

Sorter Alarm Code

Tray Alarm Code

Display code	Alarm	Resetting
02	Overstacking	Remove all copy paper from the bin.

Table 10-705

Stapler Alarm Code

Display code	Alarm	Resetting
01	Staple down	Run a self check. (Done if the results are good.)
02	Staple jam	Open the front door, remove all staple jams, and close the front door.
03	Stapler safety mechanism ON	Open the front door, remove all jams, and close the front door.
05	Stapling capacity	Remove all copy paper from the bin.
06	Stapling full	Remove all copy paper from the bin.
07.	Different paper sizes	Remove all copy paper from the bin.
09	Paper in bin	Remove all copy paper from the bin.
0A	No staple	Set a new staple cartridge.

Table 10-706

RDF Alarm Code

Display code	Alarm	RDF operation	Resetting
01	Re-circulating bar idle rotation	Stops	Turn ON/OFF the original sensor (S1).
03	Pick-up separation failure	Stops	Turn ON/OFF the original sensor (S1).
05	Original over stopper plate	Stops	Turn ON/OFF the original sensor (S1), and open/close the RDF.
11	Different number of originals after jam recovery	Stops	Turn ON/OFF the original sensor (S1).
12	Wrong number of originals	Stops at 100th original	Turn ON/OFF the original sensor (S1), and open/close the RDF.
13	Original forced off	Stops	Turn ON/OFF the original sensor (S1), and open/close the RDF.
14	Original size error	Stops	Turn ON/OFF the original sensor (S1), and open/close the RDF.
15	Mixed original sizes in image composition	Stops	Turn ON/OFF the original sensor (S1), and open/close the RDF.

Table 10-707

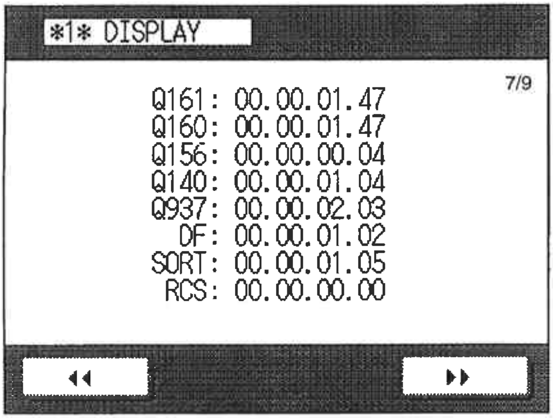
RDF Jam Codes

	Type of original jam	Sensor	Conditions	Code
Pick-up	Original forced off	S1, S7	The sensor (S7) does not detect the leading edge of an original and, in addition, the sensor (S1) has not detected an original 1500 ms after the pick-up motor (M1) has turned on.	01
	Pick-up delay	S7	The sensor (S7) does not detect the leading edge of an original 1500 ms after the pick-up motor (M1) has turned on.	02
	Registration delay	S3, S7	The sensor (S3) does not detect the leading edge of an original 350 ms after the sensor (S7) has detected the leading edge of an original.	03
	Double-feeding	S3	The sensor (S3) does not detect an original even after the first original has been placed on the copyboard glass.	06
	Leading edge retreat	S3	The sensor (S3) does not detect the leading edge of an original after original pick-up operation has started.	08
Reversal	Reversal delay 1	S8	During original reversal or delivery, the sensor (S8) does not detect the leading edge of an original 140 mm or 225 ms after the belt motor (M3) has started to rotate in clockwise direction.	11
	Reversal stationary	S8	During original reversal or delivery, the sensor (S8) does not detect the trailing edge of an original.	12
	Reversal delay 2	S8	During original delivery pick-up, the original to be delivered is brought back in the direction of the copyboard glass together with the original that has been picked up. The error occurs when the sensor (S8) does not detect the advance original 50 mm after the belt motor has started to rotate counter-clockwise.	13
	Reversal initial paper	S8	During original reversal, the sensor (S8) detects an original.	20
	Reversal pick-up delay	S3, S8	During original reversal, the sensor (S3) does not detect the leading edge of an original 100 mm or 300 ms after the sensor (S8) has detected the original.	21
	Reversal pick-up stationary	S3, S8	The sensor (S3) does not detect the trailing edge of an original 'original size + 180 mm' after the sensor (S8) has turned on.	23

Table 10-708

	Type of original jam	Sensor	Conditions	Code
Delivery	Delivery delay	S6, S8	During original delivery, the sensor (S6) does not detect an original 100 mm or 250 ms after the sensor (S8) has detected the leading of an original.	41
	Delivery stationary	S6	The sensor (S6) does not detect the trailing edge of an original 100 mm or 250 ms after a check for a reversal delivery check.	42
	RF open	MS1	The RDF is opened while in operation.	81
	Upper cover open	MS2 S4	The upper cover is opened while the RDF is in operation.	82
	Original re-circulation fault	S1	The sensor (S1) does not detect an original delivered to the original tray.	83
	Remaining jam	S6, S3 S8, S7	At the beginning of original pick-up operation, any of the sensors (S6), (S3), or (S8) detects an original. (If the paper stop plate is up, includes S7.)	84
	Remaining original	S8	During pick-up of the first original, an original is detected on the copyboard glass.	88
	Re-circulating lever idle swing (2nd original and later)	S13	For the second or subsequent originals, the re-circulating lever swung without coming into contact with an original.	89

Table 10-709



1 DISPLAY

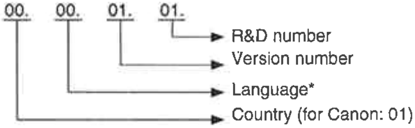
7/9

```
Q161: 00.00.01.47
Q160: 00.00.01.47
Q156: 00.00.00.04
Q140: 00.00.01.04
Q937: 00.00.02.03
  DF: 00.00.01.02
SORT: 00.00.01.05
 RCS: 00.00.00.00
```

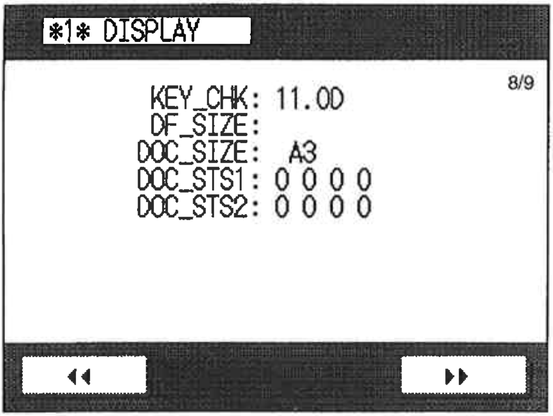
Screen 1-7

Item	Description	Remarks
Q161	Indicates the version of the ROM (Q161) on the DC controller PCB.	See "Guide to Version."
Q160	Indicates the version of the ROM (Q160) on the DC controller PCB.	See "Guide to Version."
Q156	Indicates the version of the ROM (Q156) on the DC controller PCB.	See "Guide to Version."
Q140	Indicates the version of the ROM (Q140) on the DC controller PCB.	See "Guide to Version."
Q937	Indicates the version of the ROM (Q937) on the control panel PCB.	See "Guide to Version."
DF	Indicates the version of the ROM (IC2) on the RDF controller PCB.	See "Guide to Version."
SORT	Indicates the version of the ROM (Q937) on the sorter controller PCB.	See "Guide to Version."

Guide to Version



*Language
10:Japanese
20:English
(20:North America; 21:UK)
30:French
40:German
50:Danish
60:Dutch
70:Finnish
80:Italian
90:Norwegian
A0:Portuguese
B0:Spanish
C0:Swedish



```
*1* DISPLAY                                  8/9

       KEY_CHK: 11.0D
       DF_SIZE:
      DOC_SIZE:  A3
      DOC_STS1: 0 0 0 0
      DOC_STS2: 0 0 0 0
```

Screen 1-8

Item	Description	Remarks
KEY-CHK	Indicates the code of the key pressed on the control panel. (*1)	See Table 10-710.
DF-SIZE	Indicates the size of the original detected by the RDF.	
DOC-SIZE	Indicates the size of the original detected by the copier's original size sensor.	
DOC-STS1	Indicates the output (0/1) of the copier's original size sensor.	
DOC-STS2	Indicates the output (0/1) of the copier's original size sensor.	

*1 Touch panel.

XX. XX

→ Column number of the touch panel (00 through 19, in hexadecimal)

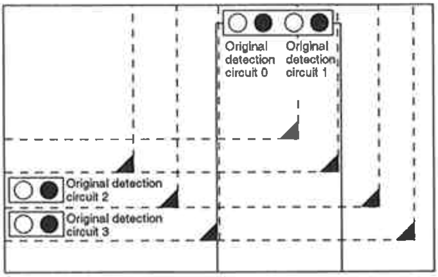
→ Row number of the touch panel (00 through 15, in hexadecimal)

Display	Key	Display	Key	Display	Key	Display	Key
00. 0F	Reset	05. 0F	7	0A. 0F	0	0F. 0F	Pre-Heat
01. 0F	Stop	06. 0F	Clear	0B. 0F	3	10. 0F	Interrupt
02. 0F	Start	07. 0F	2	0C. 0F	6	11. 0F	Use mode
03. 0F	1	08. 0F	5	0D. 0F	9	12. 0F	Guide
04. 0F	4	09. 0F	8	0E. 0F	ID		

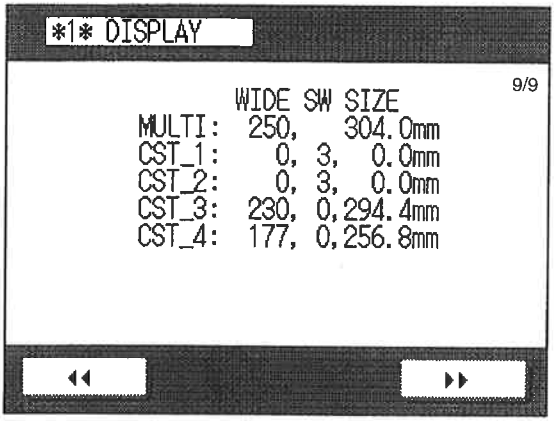
Table 10-710

Corresponding original size sensor number.

DOC,STSI: X X X X
↓ ↓ ↓ ↓
1 0 3 2


Original detection circuit 0
Original detection circuit 1
Original detection circuit 2
Original detection circuit 3

Note:
The inch-configuration type does not have original detection circuit 3.



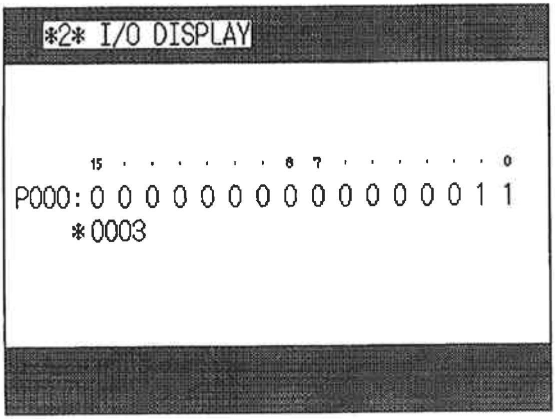
```
*1* DISPLAY
                                      9/9
           WIDE SW SIZE
     MULTI:  250,    304.0mm
     CST_1:    0, 3,   0.0mm
     CST_2:    0, 3,   0.0mm
     CST_3:  230, 0,294.4mm
     CST_4:  177, 0,256.8mm
```

Screen 1-9

Item	Description	Remarks
MULTI	Indicates the outputs of the copy paper width sensor and the paper size sensor set on the multifeeder. WIDE: output of paper width sensor (analog) SW: output of paper length sensor (0/1) SIZE: paper width (mm)	
CST-1	Indicates the outputs of the copy paper width and the paper size sensor set in the paper deck. WIDE: output of paper sensor (analog) SW: output of paper length sensor (0/1) SIZE: paper width (mm)	
CST-2	Indicates the outputs of the copy paper width and the paper size sensor set in the left deck. WIDE: output of paper width sensor (analog) SW: output of paper length sensor (0/1) SIZE: paper width (mm)	100V model only.
CST-3	Indicates the output of the copy paper width and the paper size sensor set in the cassette 3. WIDE: output of paper width sensor (analog) SW: output of paper length sensor (0/1) SIZE: paper width (mm)	
CST-4	Indicates the outputs of the copy paper width sensor and the paper size sensor set in cassette 4. WIDE: output of paper width sensor (analog) SW: output of paper length sensor (0/1) SIZE: paper width (mm)	

E. I/O Display Mode (*2*)

Press numeric keys to select the screen.
The screen will indicate the states of the input port and the output port.



```
*2* I/O DISPLAY

      15 . . . . . . 8 7 . . . . . . 0
P000: 0  0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
      *0003
```

Screen 2-1

Bit data is converted to hexadecimal data for checks on analog data (e.g., address P023 photosensitive drum potential signal).

Address	Description	Name	Signal	Jack	Remarks
PC000-00	Pick-up motor drive signal	M02	M2ON	J114B-8	0: rotate
PC000-01	Drum motor drive signal	M01	M1ON	J111B-4	0: rotate
PC000-02	Developing fan drive signal	FM05	FM5D	J115A-1	1: rotate
PC000-03	Developing clutch drive signal	CL08	DEVCD	J112A-2	1: ON
PC000-04	Holding tray feeding 1 clutch drive signal	CL01	HTF1CD	J112A-7	1: ON
PC000-05	Scanner locking solenoid drive signal (4-cassette type only)	SL01	SLCKSD	J114A-12	1: ON
PC000-06	Multifeeder pick-up roller clutch drive signal	CL07	MFPCD	J115B-2	1: ON
PC000-07	Multifeeder pick-up solenoid drive signal	SL10	SL10BD SL10FD	J115B-12	1: ON
PC000-08	Vertical path roller drive clutch drive signal	CL18	CL18D*	J115A-4	1: ON
PC000-09	Right deck pickup clutch drive signal	CL14	RDPUCD/ C1PUCD	J116A-2	1: ON
PC000-10	Cassette 2 pick-up clutch drive signal	CL16	C2PUCD	J121A-2	1: ON
PC000-11	Cassette 1 lifter motor drive signal (4-cassette type only)	M16	C1MD	J119B-11	1: ON
	Deck lifter drive motor drive signal (paper deck type only)	M18	RDLMD	J119B-11	1: ON
PC000-12	Cassette 2 lifter motor drive signal (4-cassette type only)	M17	C2LMD	J119B-9	1: ON
PC000-13	Vertical path roller 1 drive clutch drive signal	CL15	CL15D*	J117A-15	1: ON
PC000-14	Vertical path roller 2 drive clutch drive signal	CL17	CL17D*	J121B-8	1: ON
PC000-15	Deck/cassette 1 pick-up roller releasing solenoid drive signal	SL04	RDPURR/ C1PURR	J121A-15/ J116A-10	1: ON

Address	Description	Name	Signal	Jack	Remarks
PC001-00	Holding tray paper deflecting plate solenoid drive signal	SL08	HTPDD	J113B-9	1: ON
PC001-01	Holding tray weight solenoid drive signal	SL07	HTWSD	J113A-4	1: ON
PC001-02	Holding tray D-cut (pick-up) roller solenoid drive signal	SL06	HTDSD	J113A-5	1: ON
PC001-03	Fixing inlet guide drive signal	SL16	FXGDSD	J108B-15	1: ON
PC001-04	Holding tray swing solenoid drive signal	SL09	HTJSD	J113B-5	1: ON
PC001-05	Cassette 3 lifter motor drive signal	M14	C3LMD	J119A-9	1: rotate
PC001-06	Cassette 4 lifter motor drive signal	M15	C4LMD	J119A-11	1: rotate
PC001-07	Cassette 3 pick-up clutch drive signal	CL10	C3PUCD	J117A-2	1: ON
PC001-08	Cassette 4 pick-up clutch drive signal	CL12	C4PUCD	J130A-2	1: ON
PC001-09	Pick-up vertical path roller 3 drive clutch drive signal	CL11	CL11D	J117B-2	1: ON
PC001-10	Pick-up vertical path roller 4 drive clutch drive signal	CL13	CL13D	J130B-2	1: ON
PC001-11	Cassette 3 pick-up roller releasing solenoid drive signal	SL11	C3PURR	J117A-10	1: ON
PC001-12	Cassette 4 pick-up roller releasing solenoid drive signal	SL12	C4PURR	J130A-10	1: ON
PC001-13	Fixing assembly inlet guide drive signal	SL16	FXGUSD	J108B-14	1: ON
PC001-14	Wire cleaner motor home position signal			—	
PC001-15	Size detection drive			J110B-4/ 7/10	

Address	Description	Name	Signal	Jack	Remarks
PC002-00	Pick-up vertical path 0 paper detection signal	PS24	PS24D	J116B-7	1: paper present
PC002-01	Stream reading home position detection signal	PS04	SCDP2	J111A-8	0: home position
PC002-02	Registration paper detection signal	PS23	RGPD	J108A-7	1: paper present
PC002-03	Holding tray feeding assembly 2 paper detection signal	PS09	PS9D	J113B-12	1: paper present
PC002-04	Holding tray feeding assembly 1 paper detection signal	PS08	PS8D	J119A-4	1: paper present
PC002-05	Multifeeder paper detection signal	PS22	MFS	J115B-7	1: paper present
PC002-06	Fixing sub heater ON detection signal	H2	SHOND	J102B-4	1: ON
PC002-07	Fixing main heater ON detection signal	H1	MHOND	J102B-6	1: ON
PC002-08	Waste toner level signal	MSW4	WTFL	J114B-1	1: ON
PC002-09	Developing assembly toner level signal	TS2	DTEP	J106B-8	0: toner absent
PC002-10	Hopper toner level signal	TS1	TEP	J105A-6	0: toner absent
PC002-11	Original size 1 detection signal	DS1	DSZ1	J110B-5	0: original present
PC002-12	Original size 2 detection signal	DS2	DSZ2	J110B-8	0: original present
PC002-13	Original size 3A detection signal	DS3	DSZ3A	J110B-12	0: original present
PC002-14	Original size 3 B detection signal	DS3	DSZ3B	J110B-11	0: original present
PC002-15	Not used				

Address	Description	Name	Signal	Jack	Remarks
PC003-00	Cassette 2 pick-up roller releasing solenoid drive signal	SL05	C2PURR	J121A-13	1: ON
PC003-01	CC-X count signal	CCX10	CCXNTD	J123-6	1: count
PC003-02	High-voltage output enable signal	HVT	HVTRMT	J114A-10	0: high-voltage-output ON
PC003-03	Control Card V drive signal	CCV	CCNTD	J106B-1	1: count
PC003-04	Feeding fan/cleaner fan drive signal (half speed)	FM06/07	FM6D	J109-1/ J114B-3	1: half speed
PC003-05	Feeding fan/cleaner fan drive signal (full speed)	FM06/07	FM6D	J109-1/ J114B-3	1: full speed
PC003-06	Fixing assembly delivery/discharge drive signal (half speed)	FM02 FM03	FM2D FM3D	J117B-12 J104A-1	1: half speed
PC003-07	Discharge/drive signal (full speed)	FM02	FM2D	J117B-12	1: full speed
PC003-08	Potential sensor power-on signal	POT	POT-S-ON	J103B-8	1: ON
PC003-09	Multi solenoid drive signal	SL15		J115B-10	1: ON
PC003-10	Developing bias AC output signal	HVT	BIASAC	J114A-3	0: ON
PC003-11	Roller electrode bias output signal	HVT	PSTBIAS	J114A-1	0: ON
PC003-12	Post-separation AC output signal	HVT	PSTAC SPAC	J114A-7	0: ON
PC003-13	Scanning lamp ON signal	LA1	LAON	J111B-8	0: ON
PC003-14	Fixing main heater drive signal	H1	MHRD	J102B-5	0: ON
PC003-15	Fixing sub heater drive signal	H2	SHRD	J102B-3	0: ON

Address	Description	Name	Signal	Jack	Remarks
PC004-00	Scanner motor brake signal	M03	M03BK	J112B-5	1: brake ON
PC004-01	Scanner motor forward signal	M03	M03FW	J112B-7	0: forward 1: reverse
PC004-02	Scanner motor drive signal	M03	M03ON	J112B-6	0: ON
PC004-03	Scanner motor (overcurrent control) current limit	M03	M03CL	J112B-4	1: current limiter ON
PC004-04	Scanner motor mode 1 signal	M03	M03MD0	J112B-10	
PC004-05	Scanner motor mode 2 signal	M03	M03MD1	J112B-9	
PC004-06	Scanner motor mode 3 signal	M03	M03MD2	J112B-8	
PC004-07	Blank exposure power supply (0V) signal	LED2	B0V	J103A-8	0: blank ON
PC004-08	Control panel LCD back light signal	LCD	LCDGHT	J105B-11	1: ON
PC004-09	Control panel CPU reset signal	OPEPAN E	OPRST	J105B-5	0: reset
PC004-10	Internal signal (watch dog)				
PC004-11	Power switch OFF signal	SW01	PWOFF	J104A-8	1: ON
PC004-12	FT prohibit signal	M3	PWOFF	J112B-1	1: ON
PC004-13	Not used				
PC004-14	Internal signal (tray X shift star)				
PC004-15	Internal signal (tray Y shift start)				

Address	Description	Name	Signal	Jack	Remarks
PC005-00	Front door open detection signal	SW02	FDOD	J104A-4	1: open
PC005-01	Fixing/feeding unit detection signal	PS53	FFUCNT	J108A-2	0: fixing/feeding unit connected
PC005-02	Internal delivery signal	PS12	IDPD	J108B-12	0: paper present
PC005-03	Multifeeder door open detection signal	PS46	MFDC	J105A-9	1: closed 0: open
PC005-04	External delivery signal	PS10	EXDPD	J108B-7	1: paper present
PC005-05	Fixing cleaning belt length detection signal	PS11	CBOP	J108A-13	1: belt out
PC005-06	Holding tray inlet paper detection signal	PS15	PS15D	J113B-10	1: paper present
PC005-07	Holding tray registration paper detection	PS14	PS14D	J113A-3	1: paper present
PC005-08	Fixing assembly outlet paper detection signal	PS47	FXDEL	J108B-4	1: paper present
PC005-09	Holding tray pick-up detection signal	PS17	PS17D	J113B-11	1: paper present
PC005-10	Holding tray re-circulating lever home position signal	PS19	HTLPD	J113B-6	0: home position
PC005-11	Hopper assembly connector detection signal			J105A-4	0: hopper connector off
PC005-12	Holding tray unit detection signal	HT	HTCNT	J113A-14	0: holding tray unit connected
PC005-13	Power switch ON detection signal	SW1	SW1ON	J102A-6	0: ON
PC005-14	Control card detection signal	CCV	CCNNT	J106B-2	1: card present
PC005-15	Internal signal (encoder error detection)				1: error

Address	Description	Name	Signal	Jack	Remarks
PC006-00	Hopper motor (toner stirring) drive signal	M11	M11ON	J105A-4	1: ON
PC006-01	Pre-exposure LED ON signal	LED1	PEXP	J103B-2	1: ON
PC006-02	Hopper motor (toner supply) drive signal	M10	M10ON	J105A-2	1: ON
PC006-03	Drum heater full-wave/half-wave switching signal	H3	DHRD	J102B-2	1: half-wave 0: full-wave
PC006-04	Total copy counter drive signal	CNT1	TCNTD	J104B-2	1: count
PC006-05	Option copy counter drive signal	CNT2	OPCNTD	J104B-6	1: count
PC006-06	Scanner scanning fan drive signal (half wave)	FM08	FM8D	J104A-5	1: half wave
PC006-07	Scanner cooling fan drive signal (full speed)	FM08	FM8D	J104A-5	1: full speed
PC006-08	Fixing drive solenoid drive signal	SL03	FXDSD	J108B-18	1: ON
PC006-09	Fixing cleaning belt drive signal	SL14		J108A-11	1: ON
PC006-10	Delivery paper deflecting plate solenoid drive signal	SL02	DPDSD	J108B-10	1: ON
PC006-11	Holding tray re-circulating bar motor drive signal	M07	M7ON	J113A-9	1: ON
PC006-12	Holding tray registration clutch drive signal	CL03	HTRGCD	J113B-7	1: ON
PC006-13	Holding tray separation clutch drive signal	CL06	HTSPCD	J113B-8	1: ON
PC006-14	Holding tray forward clutch drive signal	CL05	HTFWCD	J113A-7	1: ON
PC006-15	Holding tray reversing clutch drive signal	CL04	HTRVCD	J113A-6	1: ON

Address	Description	Name	Signal	Jack	Remarks
PC007-00	Upper right door open detection signal	PS41	RUPDOP	J119B-4	1: closed 0: open
PC007-01	Lower right door open detection signal	PS42	RLWDOP	J119B-7	1: closed 0: open
PC007-02	Copyboard cover closed signal	PS05	CBCC	J112A-4	1: closed 0: open
PC007-03	Scanner home position signal	PS01	SCHP	J111A-2	1: home position
PC007-04	Deck/cassette 1 open/closed detection signal	PS38	RDEOP C1OP	J116B-10	1: closed 0: open
PC007-05	Cassette 2 open/closed detection signal	PS40	LDEOP C2OP	J121B-13	1: closed 0: open
PC007-06	Cassette-1 paper length signal	SV3	C1PL0	J122A-5	
PC007-07	Cassette-1 paper length signal	SV3	C1PL1	J122A-6	
PC007-08	Cassette-2 paper length signal	SV4	C2PL0 C2PL1	J122B-5	
PC007-09	Cassette-2 paper length signal	SV4	C2PL1	J122B-6	
PC007-10	Right deck paper detection signal	PS32	RDPD/ C1PD	J116A-7	1: paper present
PC007-11	Cassette 2 paper detection signal	PS35	C2PD	J121A-10	1: paper present
PC007-12	Pick-up vertical path 1 paper detection signal	PS33	PS33D	J119A-7	1: paper present
PC007-13	Pick-up vertical path 2 paper detection signal	PS36	PS36D	J121B-10	
PC007-14	Deck/cassette 1 lifter position sensor signal	PS31	C1LTP RDEL	J116A-4	1: lifter position
PC007-15	Cassette 2 lifter position sensor signal	PS34	C2LTP	J121A-7	1: lifter position

Address	Description	Name	Signal	Jack	Remarks
PC008-00	Cassette 3 paper length 0 signal	SV-1	C3PL0	J122A-1	
PC008-01	Cassette 3 paper length 1 signal	SV-1	C3PL1	J122A-2	
PC008-02	Cassette 4 paper length 0 signal	SV-2	C4PL0	J122B-1	
PC008-03	Cassette 4 paper length 1 signal	SV-2	C4PL1	J122B-2	
PC008-04	Pick-up vertical path 3 paper detection signal	PS27	PS27D	J117B-4	1: paper present
PC008-05	Pick-up vertical path 4 paper detection signal	PS30	PS30D	J130B-4	1: paper present
PC008-06	Cassette 3 paper detection signal	PS26	C3PD	J117A-7	1: paper present
PC008-07	Cassette 4 paper detection signal	PS29	C4PD	J130B-7	1: paper present
PC008-08	Cassette 3 lifter position sensor signal	PS25	C3LTP	J117A-4	1: upper limit
PC008-09	Cassette 4 lifter position sensor signal	PS28	C4LTP	J130A-4	1: upper limit
PC008-10	Internal signal (fixing assembly temperature error detection)				
PC008-11	Internal signal (CVR error detection)				
PC008-12	Internal signal (SSR error detection)				
PC008-13	Internal signal (power switch open circuit detection)				
PC008-14	Internal signal (total copy counter open circuit detection)				
PC008-15	Internal signal (option counter open circuit detection)				

Address	Description	Name	Signal	Jack	Remarks
PC009-00	Holding tray feeding unit detection	HT	HTFCNT	—	0: holding tray feeding unit-connected
PC009-01	Fixing claw jam detection signal	PS52	FXCJS	J108A-19	1: paper present
PC009-02	Service switch detection signal	SSW1	SSWON	J106B-5	1: ON
PC009-03	Scanner locked detection signal	PS48	SCLK	J114A-14	1: locked
PC009-04	Left deck pick-up outlet paper detection signal	PS49	LEXTPD	J121B-5	1: paper present
PC009-05	Cassette 3 open/closed detection	PS50	C3SS	J117B-7	1: open 0: closed
PC009-06	Cassette 4 open/closed detection	PS51	C4SS	J130B-7	1: open 0: closed
PC009-07	Sub thermistor error detection	TH2	—	J108A-9	1: error

Address	Description	Name	Signal	Jack	Remarks
PC010-00	Not used				
PC010-01	Holding tray feeding 2 clutch drive signal	CL02	HTF2CD	J112A-9	1: ON
PC010-02	Fixing/feeding unit locking solenoid drive signal	SL13	FFULSD	J108B-2	1: ON
PC010-03	Power supply unit internal relay drive signal	RL401	RL401D	J102A-5	1: ON
PC010-04	Not used				
PC010-05	Not used				
PC010-06	Not used				
PC010-07	Not used				

Address	Description	Name	Signal	Jack	Remarks
PC011-00	Not used				
PC011-01	Not used				
PC011-02	Not used				
PC011-03	Not used				
PC011-04	Multifeeder pick-up solenoid drive signal	SL10	SL10D	J115B-13	1: ON
PC011-05	Not used				
PC011-06	Internal signal (clock)				
PC011-07	Pick-up motor brake signal	M02	M02BLK	J114B-5	1: brake ON

Address	Description	Name	Signal	Jack	Remarks
PC012-00	Internal signal (digit)			J125-1	
PC012-01	Internal signal (digit)			J125-2	
PC012-02	Internal signal (digit)			J125-3	
PC012-03	Internal signal (digit)			J125-4	
PC012-04	Not used				
PC012-05	Not used				
PC012-06	Not used				
PC012-07	Not used				

Address	Description	Name	Signal	Jack	Remarks
PC017-00	Internal signal (key return)			J125-5	
PC017-01	Internal signal (key return)			J125-6	
PC017-02	Internal signal (key return)			J125-7	
PC017-03	Internal signal (key return)			J125-8	
PC017-04	Internal signal (key return)			J125-9	
PC017-05	Internal signal (key return)			J125-10	
PC017-06	Internal signal (key return)			J125-11	
PC017-07	Internal signal (key return)			J125-12	

Address	Description	Name	Signal	Jack	Remarks
PC020	Multifeeder paper width signal (analog)	SVR1		J115B-4	
PC021	Cassette 1 paper width signal	SVR4	C1PW	J130B-10	
PC022	Cassette 2 paper width signal	SVR5	C2PW	J130A-12	
PC023	Photosensitive drum potential signal (analog)		POT	J103B-9	
PC024	Cassette 3 paper width signal	SVR2	C3PW	J117B-10	
PC025	Cassette 4 paper width signal	SVR3	C4PW	J117A-12	
PC026	Not used				

RDF-H1 (1/4)

Address	Description	Name	Signal	Jack	Remarks
PC027-00	Stopper plate solenoid (SL1)		STPSL	J5-10	1: ON
PC027-01	Paper deflecting plate solenoid (SL3)		DFSLD	J4-2	1: ON
PC027-02	Not used.				
PC027-03	Not used.				
PC027-04	Not used.				
PC027-05	Not used.				
PC027-06	Not used.				
PC027-07	Not used.				
PC028-00	Pick-up roller sensor (S5)		PUSP	J5-2	1: paper present
PC028-01	Delivery sensor 1 (S6)		PSP3	J9-6	1: paper present
PC028-02	Pick-up sensor (S7)		PDP1	J9-9	1: paper present
PC028-03	Not used.				
PC028-04	PCB internal signal				
PC028-05	PCB internal signal				
PC028-06	Not used.				
PC028-07	Not used.				
PC029-00	Original sensor (S1)		DEP1	J5-1	1: paper present
PC029-01	Registration sensor (S3)		PDP2	J9-20	1: paper present
PC029-02	Original width detecting VR		DMPW	J8-8	A/D value stored in adjustment mode
PC029-03	Not used				
PC029-04	Reversal sensor (S8)		RVPD	J9-12	1: paper present
PC029-05	Delivery sensor 2 (S12)		PDP4	J8-2	1: paper present
PC029-06	Original tray paper sensor (LED1)				1: light ON
PC029-07	Registration sensor (LED2)				1: light ON

RDF-H1 (2/4)

Address	Description	Name	Signal	Jack	Remarks
PC030-00	Belt motor clock sensor (S10)		BMCLK	J9-18	alternates between 1 and 0 during rotation
PC030-01	Feeding motor clock sensor (S9)		FMCLK	J9-15	alternates between 1 and 0 during rotation
PC030-02	Registration roller clock sensor (S11)		RRCLK	J5-5	alternates between 1 and 0 during rotation
PC030-03	PCB internal signal				
PC030-04	PCB internal signal				
PC030-05	Not used.				
PC030-06	Not used.				
PC030-07	Not used.				
PC031-00	Copier communication signal				
PC031-01	Copier communication signal				
PC031-02	Copier communication signal				
PC031-03	Not used.				
PC031-04	Copier communication signal				
PC031-05	Not used.				
PC031-06	Not used.				
PC031-07	Not used.				
PC032-00	PCB internal signal				
PC032-01	Not used.				
PC032-02	PCB internal signal				
PC032-03	Belt motor drive signal				1: ON (PCB internal signal)
PC032-04	PCB internal signal				
PC032-05	Feeding motor drive signal				1: ON (PCB internal signal)
PC032-06	PCB internal signal				
PC032-07	Pick-up motor drive signal				1: ON (PCB internal signal)

RDF-H1 (3/4)

Address	Description	Name	Signal	Jack	Remarks
PC033-00	PCB internal signal				1: belt motor CW rotation
PC033-01	PCB internal signal				1: pick-up motor CW rotation
PC033-02	PCB internal signal				
PC033-03	Original detection LED		DSD	J8-4	1: ON
PC033-04	PCB internal signal				
PC033-05	Brake		BKD	J6-2	1: ON
PC033-06	Clutch		CLD	J13-2	1: ON
PC033-07	Paper retaining solenoid (SL2)		WSLD	J5-12	1: ON
PC034-00	Push switch (SW1)		SW1		1: pressed
PC034-01	Push switch (SW2)		SW2		1: pressed
PC034-02	Push switch (SW3)		SW3		1: pressed
PC034-03	Re-circulation sensor (S13)		LDD	J14-1	1: paper present
PC034-04	Upper cover switch (MS2)		UPCC1	J3-2	1: closed
PC034-05	RDF switch (MS1)		RFC	J2-6	1: closed
PC034-06	PCB internal signal				
PC034-07					
PC035-00	LED (PCB internal signal)				
PC035-01	LED (CPB internal signal)				
PC035-02	Not used.				
PC035-03	Not used.				
PC035-04	Not used.				
PC035-05	Not used.				
PC035-06	Not used.				
PC035-07	Not used.				

RDF-H1 (4/4)

Address	Description	Name	Signal	Jack	Remarks
PC036-00	DIP SW1				1: ON
PC036-01	DIP SW2				1: ON
PC036-02	DIP SW3				1: ON
PC036-03	DIP SW4				1: ON
PC036-04	DIP SW5				1: ON
PC036-05	DIP SW6				1: ON
PC036-06	DIP SW7				1: ON
PC036-07	DIP SW8				1: ON
PC037-00 to PC046-07	Not used.				
PC048-00	Original sensor (S1)		DEP1	J5-7	in hexadecimal notation.
PC048-01	Registration sensor (S3)		PDP2	J9-20	in hexadecimal notation.
PC048-02	Original width volume (VR1)		DMPS	J8-8	in hexadecimal notation.
PC048-03	Not used.				
PC048-04	Not used.				
PC048-05	Not used.				
PC048-06	Original tray sensor LED1 ON signal				
PC048-07	Registration sensor LED3 ON signal				

Stapler Sorter-E2 (1/9)

Address	Description	Name	Signal	Jack	Remarks
PC062-00	Feeding motor (M1) control signal		FDPWM		1: ON
PC062-01	Push bar drive motor (M7) rotation control signal				1: Up
PC062-02	Not used				
PC062-03	Push bar drive motor (M7) drive signal				1: ON
PC062-04	Guide bar motor (M8) pulse signal 1		GBMA		1: ON
PC062-05	Guide bar motor (M8) pulse signal 2		GBMB		1: ON
PC062-06	Guide bar motor (M8) pulse signal 3		GBMA		1: ON
PC062-07	Guide bar motor (M8) pulse signal 4		GBMB		1: ON
PC063-00	Reference wall drive motor (M6) control signal 1		GWMA		1: ON
PC063-01	Reference wall drive motor (M6) control signal 2		GWMB		1: ON
PC063-02	Non sort paper detection signal (PI3)		NSPEXT		1: paper present
PC063-03	Reference wall home position signal (PI13)		GWHP		1: home position
PC063-04	Sort paper detection signal (PI4)		SPEXT		1: paper present
PC063-05	Guide bar home position signal (PI16)		GBHP		1: home position
PC063-06	Multi guide drive motor control signal 1 (M5)		MGMA		1: ON
PC063-07	Multi guide drive motor control signal 1 (M5)		MGMB		1: ON

Stapler Sorter-E2 (2/9)

Address	Description	Name	Signal	Jack	Remarks
PC064-00	D/A converter serial signal				
PC064-01	Not used				
PC064-02	Feeding motor (M1) speed change signal		FDMVC		1: control speed
PC064-03	D/A converter load signal				0: load
PC064-04	D/A converter serial communication clock signal				
PC064-05	Not used				
PC064-06	Not used				
PC064-07	Not used				
PC065-00	Feeding motor (M1) CW rotation signal		FDMCCW		1: ON
PC065-01	Feeding motor (M1) CCW rotation signal		FDMCCW		1: ON
PC065-02	Stapler unit fixed claw releasing solenoid (SL5) drive signal		MHRSLD		1: ON
PC065-03	Paper path switching solenoid (SL1) drive signal		PSLD		1: ON
PC065-04	Paper retaining solenoid (SL3) drive signal		PHSLD		1: ON
PC065-05	Stapler unit position fixing claw releasing solenoid (SL5) drive signal		HDRSLD		1: ON
PC065-06	Stapler motor (M2) CCW rotation signal		SPMCCW		1: ON
PC065-07	Stapler motor (M2) CW rotation signal		SPMCW		1: ON

Stapler Sorter-E2 (3/9)

Address	Description	Name	Signal	Jack	Remarks
PC066-00	Bin shift motor (M9) drive signal				1: Up
PC066-01	Stapler unit swing motor (M4) rotation signal				1: ON
PC066-02	Stapler unit swing motor (M4) drive signal				1: ON
PC066-03	Not used				
PC066-04	Not used				
PC066-05	Not used				
PC066-06	Not used				
PC066-07	Not used				
PC067-00	Stapler unit shift home position signal (S2)		MVHP		1: home position
PC067-01	Logic voltage monitor signal				0: voltage down
PC067-02	Not used				
PC067-03	Bin internal paper sensor 2 analog input signal (S7)				at input, alternates between 1 and 0.
PC067-04	Stapler inside paper sensor analog input signal				at input, alternates between 1 and 0.
PC067-05	Bin internal paper sensor analog input signal (S4)				at input, alternates between 1 and 0.
PC067-06	Feeding motor current value analog input signal				at input, alternates between 1 and 0.
PC067-07	Feeding motor speed change analog input signal				at input, alternates between 1 and 0.
PC068-00	Not used				
PC068-01	Not used				
PC068-02	Not used				
PC068-03	Not used				
PC068-04	Stapler unit shift motor (M3) pulse signal 1		SLDMB		1: ON
PC068-05	Stapler unit shift motor (M3) pulse signal 2		SLDMA		1: ON
PC068-06	Stapler unit shift motor (M3) pulse signal 3		SLDMB		1: ON
PC068-07	Stapler unit drive motor (M3) pulse signal 4		SLDMA		1: ON

Stapler Sorter-E2 (4/9)

Address	Description	Name	Signal	Jack	Remarks
PC069-00	Stapler unit swing motor (PI8) clock signal		SWMCLK		alternates between 0 and 1.
PC069-01	Bin shift motor (PI17) clock signal		BMCLK		alternates between 0 and 1.
PC069-02	Feeding motor (PI5) clock signal		FMCLK		alternates between 0 and 1.
PC069-03	Lead cam position detection signal (PI20)		LDP		alternates between 0 and 1.
PC069-04	Lead cam center position detection signal (PI21)		LDCP		1: ON
PC069-05	Not used				1: ON
PC069-06	Not used				
PC069-07	Not used				
PC070-00	Stapler unit swing motor (M4) pulse oscillation signal				
PC070-01	Push bar drive motor (M7) pulse oscillation signal				
PC070-02	Feeding motor (M1) rotation speed reference signal		FDREF		
PC070-03	Not used				
PC070-04	Bin shift motor (M9) pulse signal 1		SFTA		1: ON
PC070-05	Bin shift motor (M9) pulse signal 2		SFTB		1: ON
PC070-06	Bin shift motor (M9) pulse signal 3		SFTA		1: ON
PC070-07	Bin shift motor (M9) pulse signal 4		SFTB		1: ON
PC071-00	Matrix digit output signal 0				
PC071-01	Matrix digit output signal 1				
PC071-02	Matrix digit output signal 2				
PC071-03	Matrix digit output signal 3				
PC071-04	Matrix digit output signal 4				
PC071-05	Matrix SEG output signal 0				
PC071-06	Matrix SEG output signal 1				
PC071-07	Matrix SEG output signal 2				

Stapler Sorter-E2 (5/9)

Address	Description	Name	Signal	Jack	Remarks
PC072-00	Matrix COM input signal 0				
PC072-01	Matrix COM input signal 1				
PC072-02	Matrix COM input signal 2				
PC072-03	Matrix COM input signal 3				
PC072-04	Matrix COM input signal 4				
PC072-05	Gear swing (SL4) drive signal		GCSLD		1: ON
PC072-06	Not used				
PC072-07	All solenoids drive signal				1: all ON
PC073-00	Stapling home position detection signal (Q1)		SPL-HP		1: home position
PC073-01	Reference wall home position detection signal (PI13)		GWHP		1: home position
PC073-02	Stapler unit swing home position detection signal (PI9)		SWHP		1: home position
PC073-03	Multi guide home position detection signal (PI12)		MGHP		1: home position
PC073-04	Stapler unit swing prohibit position signal (MSW2)		SGSTPP		1: stapling reading
PC073-05	Stapler unit orientation position 2 signal (S1)		HLD2		1: front 1 location
PC073-06	Stapler unit orientation position 1 signal (S1)		HLD1		1: 2 locations/rear signal location
PC073-07	Paper retaining signal (PI11)		PHS		1: paper retaining position
PC074-00	Not used				
PC074-01	Multi guide drive motor/reference wall drive motor drive signal				1: ON
PC074-02	Not used				
PC074-03	Not used				
PC074-04	Not used				
PC074-05	Not used				
PC074-06	Not used				
PC074-07	Not used				

Stapler Sorter-E2 (6/9)

Address	Description	Name	Signal	Jack	Remarks
PC075-00	Stapling position LED 4 ON signal				1: ON
PC075-01	Stapling position LED 1 ON signal				1: ON
PC075-02	Staple absent LED ON signal				1: ON
PC075-03	Stapling position LED 5 ON signal				1: ON
PC075-04	Stapling position LED 2 ON signal				1: ON
PC075-05	Front retrieval key LED ON signal				1: ON
PC075-06	Stapling position LED 3 ON signal				1: ON
PC075-07	Staple key LED ON signal				1: ON
PC076-00	DIP switch 1-4 detection signal				1: ON
PC076-01	DIP switch 1-3 detection signal				1: ON
PC076-02	DIP switch 1-2 detection signal				1: ON
PC076-03	DIP switch 1-1 detection signal		JNTS		1: ON
PC076-04	Joint signal (PI1)				1: connected
PC076-05	Not used				
PC076-06	Not used				
PC076-07	Not used				

Stapler Sorter-E2 (7/9)

Address	Description	Name	Signal	Jack	Remarks
PC077-00	DIP switch 1-8 detection signal				1: ON
PC077-01	DIP switch 1-7 detection signal				1: ON
PC077-02	DIP switch 1-6 detection signal				1: ON
PC077-03	DIP switch 1-5 detection signal				1: ON
PC077-04	Front door open signal (MSW3)		DROPN		1: closed
PC077-05	Not used				
PC077-06	Not used				
PC077-07	Not used				
PC078-00	Staple mode key check signal				1: ON
PC078-01	Stapler unit set detection signal				1: stapler unit present
PC078-02	Staple absent signal (SW1)		HKEPN		1: staple absent
PC078-03	Stapler safety detection signal (MSW1)		SFTYSW		1: ON
PC078-04	Stapler unit swing position signal (PI10)		SWGP		1: ON
PC078-05	Not used				
PC078-06	Not used				
PC078-07	Not used				
PC079-00	Front retrieval key check signal				1: ON
PC079-01	Shift down key check signal				1: ON
PC079-02	Bin home position signal (PI18)		BHP		1: home position
PC079-03	PCB check signal				0: S-order PCB
PC079-04	Front door open internal signal		DROPN		1: door closed
PC079-05	Not used				
PC079-06	Not used				
PC079-07	Not used				

Stapler Sorter-E2 (8/9)

Address	Description	Name	Signal	Jack	Remarks
PC080-00	Staple start key check signal				1: ON
PC080-01	Shift up key check signal				1: ON
PC080-02	Feeding guide home position detection signal (PI6)				1: ON
PC080-03	Bin external paper detection signal (PI7)				1: paper present
PC080-04	Feeding guide up signal (PI2)				1: UP
PC080-05	Not used				
PC080-06	Not used				
PC080-07	Not used				
PC081-00	Not used				
PC081-01	Not used				
PC081-02	Not used				
PC081-03	Not used				
PC081-04	Not used				
PC081-05	Controller PCB LED 1 ON signal				1: ON
PC081-06	Controller PCB LED 2 ON signal				1: ON
PC081-07	Not used				
PC083-00~07	Bin internal paper sensor 2 (S7) A/D input value				hexadecimal, 4-digit notation
PC084-00~07	Stapler internal sensor (S5) A/D input value				
PC085-00~07	Bin internal paper sensor (S4) A/D input value				
PC086-00~07	Feeding motor current value (M1) A/D input value				
PC087-00~07	Feeding motor speed change (M1) A/D input value				
PC088-00~07	Stapler internal paper sensor (S5) D/A output signal				
PC089-00~07	Swing motor current value (M4) D/A output value				
PC090-00~07	Stapler unit shift motor current value (M3) D/A output value				

Stapler Sorter-E2 (9/9)

Address	Description	Name	Signal	Jack	Remarks
PC091-00~07	Bin sift motor current value (M9) D/A output value				hexadecimal, 4-digit notation
PC092-00~07	Guide bar drive motor current value (M8) D/A output value				
PC093-00~07	Bin internal sensor intensity value (S4) D/A output value				
PC094-00~07	Push bar drive motor current value (M7)				
PC095-00~07	Bin internal paper sensor 2 intensity value (S7) D/A output value				

Sorter-E1 (1/2)

Address	Description	Name	Signal	Jack	Remarks
PC062-00	Serial clock for EEPROM		EESCK		
PC062-01	Serial output data EEPROM		EEDI		
PC062-02	Chip select signal for EEPROM		EECS		1: ON
PC062-03	Bin shift motor (M2) drive signal		BSMD		1: ON
PC062-04	Bin shift motor (M2) PWM signal		BSM		
PC062-05	Bin shift motor (M2) DOWN signal		BMDWN		
PC062-06	Bin shift motor (M2) UP signal		BMUP		
PC062-07	Feeding motor (M1) PWM signal		FEEDPWM		
PC063-00	Delivery sensor (PI1) signal		PD		1: paper present
PC063-01	Bin home position signal		BHP		0: home position
PC063-02	Lead cam HP sensor (PI3) signal		LDP		1: home position
PC063-03	Joint sensor (MS1) signal		JNTS		0: not connected
PC063-04	24V DOWN detection signal				0: 24V DOWN
PC063-05	Not used				
PC063-06	EEPROM serial input data		EED 0		
PC063-07	EEPROM BUSY signal		EEBSY		0: BUSY
PC064-00	DIP SW 0				
PC064-01	DIP SW 1				
PC064-02	DIP SW 2				
PC064-03	DIP SW 3				
PC064-04	PUSH SW 1				
PC064-05	PUSH SW 2				
PC064-06	Not used				
PC064-07	Not used				

Sorter-E1 (2/2)

Address	Description	Name	Signal	Jack	Remarks
PC065-00	Not used				
PC065-01	Feeding motor (M1) CW/CCW signal		FMA/FMB		0: CW
PC065-02	Feeding motor (M1) current switching signal 1		FMCCC1		
PC065-03	Feeding motor (M1) current switching signal 2		FMCCC2		
PC065-04	LED1 ON signal		LED		0: ON
PC065-05	Not used				
PC065-06	Not used				
PC065-07	Not used				

Stapler Sorter-G1/Sorter-G1 (1/3)

Address	Description	Name	Signal	Jack	Remarks
PC062-00	Joint signal (MS1)	MS1	SOP		1: open
PC062-01	Stapler cover (MS5)	MS5	SPLOPN		1: open
PC062-02	Stapler set signal (MS6)	MS6	SPL-SET		1: at HP
PC062-03	Staple sensor (PI13)	PI13	HKEMP		0: staple absent
PC062-04	Stapler home position sensor	PI12	SPL-HP		1: at HP
PC062-05	Stapler swing signal (MS9)	MS9	SWGSET		0: at HP
PC062-06	Bin paper sensor				0: paper present
PC062-07	Not used				
PC063-00	Staple LED signal		SPLPK		1: ON
PC063-01	Not used				
PC063-02	Stapler swing motor drive signal	M5	SWGMD		0: motor ON
PC063-03	Not used				
PC063-04	Not used				
PC063-05	Not used				
PC063-06	Not used				
PC063-07	Not used				
PC064-00	Bin paper sensor	PT1	BPD		1: paper present
PC064-01	24V detection				1: power down
PC064-02	Bin HP sensor connector OFF detection				0: OFF
PC064-03	Lead cam sensor connector OFF detection				0: OFF
PC064-04	Bin shift clock sensor connector OFF signal				0: OFF
PC064-05	Guide bar HP connector OFF detection				0: OFF
PC064-05					0: OFF
PC064-07	Stapler HP sensor connector OFF detection				0: OFF

Stapler Sorter-G1/Sorter-G1 (2/3)

Address	Description	Name	Signal	Jack	Remarks
PC065-00	Feeding motor clock sensor	PI6	FMCLK		
PC065-01	Bin shift motor clock sensor	PI9	BMCLK		
PC065-02	Lead cam sensor	PI2	LCHP		1: at level (HP)
PC065-03	Bin HP sensor	PI3	BHP		1: at HP
PC065-04	Guide bar HP sensor	PI7	SGBHP		1: at HP
PC065-05	Not used				
PC065-06	Not used				
PC065-07	Not used				
PC066-00	Stapler motor CW rotation signal	M4	SPLMFW		1: CW
PC066-01	Stapler motor CCW rotation signal	M4	SPLMRV		1: CCW
PC066-02	Guide bar swing motor pulse signal 0	M3	GBMA		
PC066-03	Guide bar swing motor pulse signal 1	M3	GBMB		
PC066-04	Feeding motor clock sensor	PI6	FMCLK		
PC066-05	Not used				
PC066-06	Bin shift motor clock sensor	PI9	BMCLK		
PC066-07	Guide bar swing motor control signal		GBMON		1: ON
PC067-00	Feeding motor PWM signal	M1	FMD		0: ON
PC067-01	Feeding motor brake signal	M1			1: brake
PC067-02	Bin shift motor PWM signal	M2			1: ON
PC067-03	Bin shift motor ON signal	M2			1: ON
PC067-04	Paper path switching solenoid drive signal	SL2	PSLD		1: ON
PC067-05	Not used				
PC067-06	Paper holding solenoid drive signal	SL3	PHSLD		1: ON
PC067-07	Bin shift motor UP signal	M2	BMUP		0: UP

Stapler Sorter-G1/Sorter-G1 (3/3)

Address	Description	Name	Signal	Jack	Remarks
PC068-00	DIP SW1				0: ON
PC068-01	DIP SW2				0: ON
PC068-02	DIP SW3				0: ON
PC068-03	DIP SW4				0: ON
PC068-04	PUSH SW2				0: ON
PC068-05	PUSH SW3				0: ON
PC068-06	Stapler present/absent switch signal				0: stapler sorter
PC068-07	Manual staple key		MNSPL		0: ON
PC069-00	Bin paper sensor D/A output 0				
PC069-01	Bin paper sensor D/A output 1				
PC069-02	Bin paper sensor D/A output 2				
PC069-03	Bin paper sensor D/A output 3				
PC069-04	Bin paper sensor D/A output 4				
PC069-05	Bin paper sensor D/A output 5				
PC069-06	Bin paper sensor D/A output 6				
PC069-07	Bin paper sensor D/A output 7				
PC070-00	Joint sensor (PI)				0: open
PC070-01	Door sensor (PI)				0: open
PC070-02	Not used				
PC070-03	Not used				
PC070-04	Sort sensor				1: paper present
PC070-05	Non-sort sensor				1: paper present
PC070-06	Not used				
PC070-07	Not used				
Hereafter	Not used				

Address	Description	Name	Signal	Jack	Remarks
PC097-00 PC097-01	Primary charging wire cleaning motor drive signal	M12	PCLM	J103B-3 J103B-4	1/0:motor CW 0/1:motor CCW
PC097-02 PC097-03	Pre-transfer charging wire cleaning motor drive signal	M13	PTRCLM	J103A-1 J103A-2	1/0:motor CW 0/1:motor CCW
PC097-04 PC097-05	Transfer/separation charging wire cleaning motor drive signal	M06	TSCLM	J108B-19 J108A-1	1/0:motor CW 0/1:motor CCW
PC097-06	Primary charging wire cleaner home position signal		PCLHP		1: home position
PC097-07	Not used				

Address	Description	Name	Signal	Jack	Remarks
PC098-00	Not used				
PC098-01	Pre-transfer charging wire cleaner home position signal		PTCLHP		1: home position
PC098-02	Transfer/separation charging wire cleaner home position signal		TSCLHP		1: home position
PC098-03	Not used				
PC098-04	Holding tray Y motor home signal	M08	M08HLD	J113A-12	
PC098-05	Holding tray Y motor (phase A) signal	M08	M08A	J113A-13	
PC098-06	Holding tray Y motor (phase B) signal	M08	M08B	J113A-11	
PC098-07	Holding tray X motor hold signal	M09	M09HLD	J113B-3	

Address	Description	Name	Signal	Jack	Remarks
PC100-00	Holding tray X motor (phase A) signal	M09	M09A	J113B-2	
PC100-01	Holding tray X motor (phase B) signal	M09	M09B	J113B-4	
PC100-02	Holding tray Y home position signal	PS20	HTXHP	J113A-10	
PC100-03	Holding tray X home position signal	PS21	HTYHP	J113B-1	1: home position
PC100-04	Lens X motor hold signal	M04	M04ACM M04BCM	J110A-3 J110A-6	
PC100-05	Lens X motor (phase A) signal	M04	M04A	J110A-1 J110A-2	
PC100-06	CVR PWM signal			J111B-7	
PC100-07	Not used				

Address	Description	Name	Signal	Jack	Remarks
PC101-00	Lens X motor (phase B) signal	M04	M04B	J110A-4 J110A-5	
PC101-01	Lens Y motor hold signal	M05	M05ACM M05BCM	J110A-12 J110A-15	
PC101-02	Not used				
PC101-03	Not used				
PC101-04	Not used				
PC101-05	Not used				
PC101-06	Not used				
PC101-07	Not used				

Address	Description	Name	Signal	Jack	Remarks
PC102-00	Lens Y motor (phase A) signal	M05	M05A	J110A-10 J110A-11	
PC102-01	Lens Y motor (phase B) signal	M05	M05B	J110A-13 J110A-14	
PC102-02	Lens X home position signal	PS06	LXHP	J110A-8	1: home position
PC102-03	Lens Y home position	PS07	LYHP	J110B-2	1: home position
PC102-04	Internal signal (lens X drive end)				
PC102-05	Internal signal (lens Y drive end)				
PC102-06	Internal signal (holding tray X drive end)				
PC102-07	Internal signal (holding tray Y drive end)				

Address	Description	Name	Signal	Jack	Remarks
PC104-00	Not used				
PC104-01	Not used				
PC104-02	Internal signal (holding tray X drive start)				
PC104-03	Not used				
PC104-04	Not used				
PC104-05	Not used				
PC104-06	Not used				
PC104-07	Not used				

Address	Description	Name	Signal	Jack	Remarks
PC105-00	Internal signal (holding tray Y drive start)				
PC105-01	Not used				
PC105-02	Not used				
PC105-03	Not used				
PC105-04	Not used				
PC105-05	Not used				
PC105-06	Not used				
PC105-07	Not used				

Address	Description	Name	Signal	Jack	Remarks
PC118-00	Digit 0 input				
PC118-01	Digit 0 input				
PC118-02	Digit 0 input				
PC118-03	Digit 0 input				
PC118-04	Digit 0 input				
PC118-05	Digit 0 input				
PC118-06	Digit 0 input				
PC118-07	Digit 0 input				

Address	Description	Name	Signal	Jack	Remarks
PC119-00	Digit 1 input				
PC119-01	Digit 1 input				
PC119-02	Digit 1 input				
PC119-03	Digit 1 input				
PC119-04	Digit 1 input				
PC119-05	Digit 1 input				
PC119-06	Digit 1 input				
PC119-07	Digit 1 input				

Address	Description	Name	Signal	Jack	Remarks
PC120-00	Digit 2 input				
PC120-01	Digit 2 input				
PC120-02	Digit 2 input				
PC120-03	Digit 2 input				
PC120-04	Digit 2 input				
PC120-05	Digit 2 input				
PC120-06	Digit 2 input				
PC120-07	Digit 2 input				

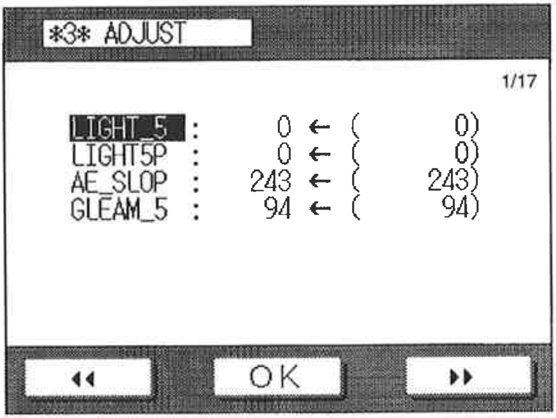
Address	Description	Name	Signal	Jack	Remarks
PC121-00	Digit 3 input				
PC121-01	Digit 3 input				
PC121-02	Digit 3 input				
PC121-03	Digit 3 input				
PC121-04	Digit 3 input				
PC121-05	Digit 3 input				
PC121-06	Digit 3 input				
PC121-07	Digit 3 input				

F. Adjustment Mode (*3*)

Press the <</>> key to select the screen.

Press the appropriate item to highlight.

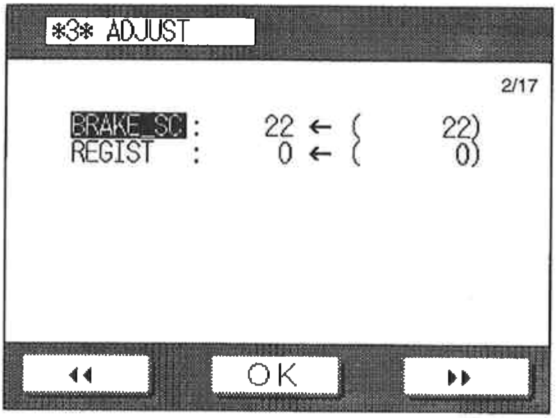
Enter the appropriate value on the keypad, and press the OK key to accept. (Use the User Mode key to check.)



```
*3* ADJUST
                                  1/17
LIGHT_5  :     0 ← (      0)
LIGHT5P  :     0 ← (      0)
AE_SLOP  :   243 ← (    243)
GLEAM_5  :    94 ← (     94)
```

Screen 3-1

Item	Description	Settings	Remarks
LIGHT-5	Use it to adjust the reference ON voltage of the scanning lamp for copying.	-35~35	A higher setting will make the copies lighter.
LIGHT-5P	Use it to adjust the reference ON voltage of the scanning lamp for copying in photo mode.	-35~35	A higher setting will make the copies lighter.
AE-SLOP	Use it to adjust the intensity for newspaper originals in AE mode.	0~1023	A higher setting will make newspaper copies darker.
GLEAM-5	Use it to adjust the optimum exposure.	53~139	A higher setting will make the copies lighter.

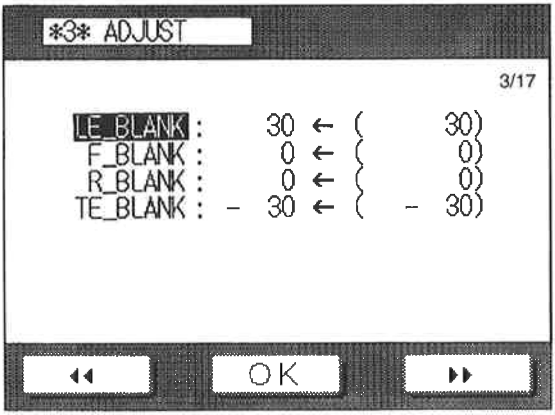


```
*3* ADJUST

                                    2/17
    BRAKE_SC :     22 ← (        22)
    REGIST   :      0 ← (         0)
```

Screen 3-2

Item	Description	Settings	Remarks
BRAKE-SC	Use it to adjust the braking applied when the scanner moves in reverse.	0~100	A higher setting will increase the braking.
REGIST	Use it to adjust the margin (registration) along the leading edge of copies.	-100~100	A higher setting will delay the timing at which the registration roller turns ON, thereby decreasing the leading edge margin. (in 0.1mm increments)



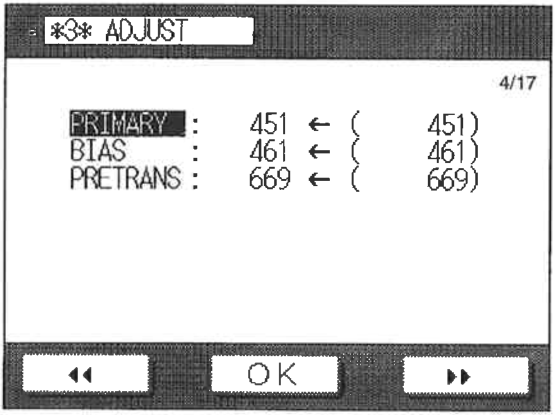
3 ADJUST

3/17

LE_BLANK : 30 ← (30)
F_BLANK : 0 ← (0)
R_BLANK : 0 ← (0)
TE_BLANK : - 30 ← (- 30)

Screen 3-3

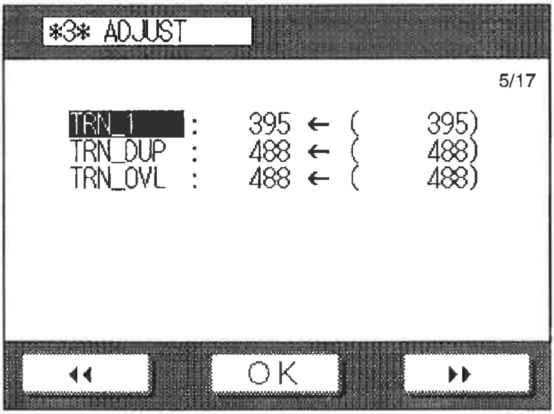
Item	Description	Settings	Remarks
LE-BLANK	Use it to adjust the leading edge non-image width (ON period of the blank exposure lamp).	-100~100	A higher setting will increase the leading edge non-image margin.
F-BLANK	Use it to adjust the margin along the front (ON period of the blank exposure lam).	-100~100	A higher setting will increase the margin along the front.
R-BLANK	Use it to adjust the rear margin (ON period of the blank exposure lamp).	-100~100	A higher setting will decrease the rear margin.
TE-BLANK	Use it to adjust the trailing edge non-image width (ON period of the blank exposure lamp).	-100~100	A higher setting will decrease the trailing edge non-image margin.



PRIMARY : 451 ← (451)
BIAS : 461 ← (461)
PRETRANS : 669 ← (669)

Screen 3-4

Item	Description	Settings	Remarks
PRIMARY	Use it to adjust the application voltage for the primary charging assembly. (Be sure to enter the value recorded on the service label when replacing the DC controller PCB in the field.)	0~1023	
BIAS	Use it to adjust the developing bias. (Be sure to enter the value on the service label whenever replacing the DC controller PCB in the field.)	Label value ±34	
PRETRANS	Use it to adjust the current for the pre-transfer charging assembly. (Be sure to enter the value recorded on the service label whenever replacing the DC controller PCB in the field.)	Label value ±200	

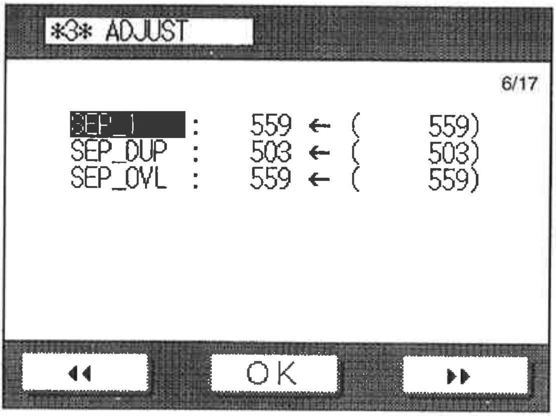

3 ADJUST

5/17

```
TRN_1    :  395 ← (   395)
TRN_DUP  :  488 ← (   488)
TRN_OVL  :  488 ← (   488)
```

Screen 3-5

Item	Description	Settings	Remarks
TRN-1	Use it to adjust the current (1st side) for the transfer charging assembly. (Be sure to enter the value recorded on the service label whenever replacing the DC controller PCB in the field.)	Label value ±100	
TRN-DUP	Use it to adjust the current (2nd side, 2-sided copy) for the transfer charging assembly. (Be sure to enter the value recorded on the service label whenever replacing the DC controller PCB in the field.)	Label value ±100	
TRN-OVL	Use it to adjust the current (2nd side, overlay copy) for the transfer charging assembly. (Be sure to enter the value on the service label whenever replacing the DC controller PCB in the field.)	Label value ±100	



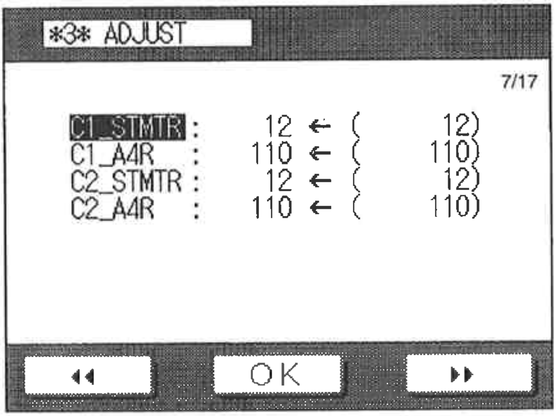
3 ADJUST

6/17

```
SEP_1    :   559 ← (    559)
SEP_DUP  :   503 ← (    503)
SEP_OVL  :   559 ← (    559)
```

Screen 3-6

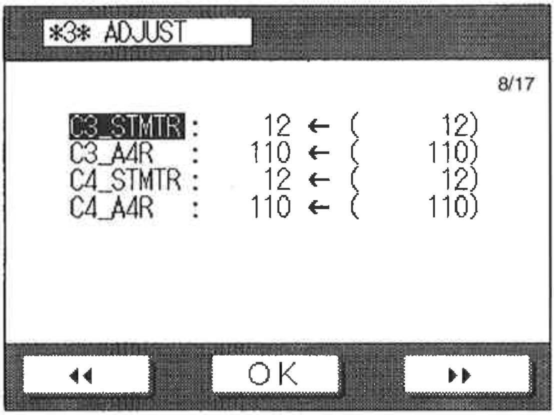
Item	Description	Settings	Remarks
SEP-1	Use it to adjust the current (1st side) for the separation charging assembly. (Be sure to enter the value on the service label whenever replacing the DC controller PCB in the field.)	Label value ±200	
SEP-DUP	Use it to adjust the current (2nd side, 2-sided copy) for the separation charging assembly. (Be sure to enter the value recorded on the service label whenever replacing the DC controller PCB in the field.)	Label value ±200	
SEP-OVL	Use it to adjust the current (2nd side, overlay copy) for the separation charging assembly. (Be sure to enter the value recorded on the service label whenever replacing the DC controller PCB.)	Label value ±200	



```
C1_STMTR :    12 ← (     12)
C1_A4R   :   110 ← (    110)
C2_STMTR :    12 ← (     12)
C2_A4R   :   110 ← (    110)
```

Screen 3-7

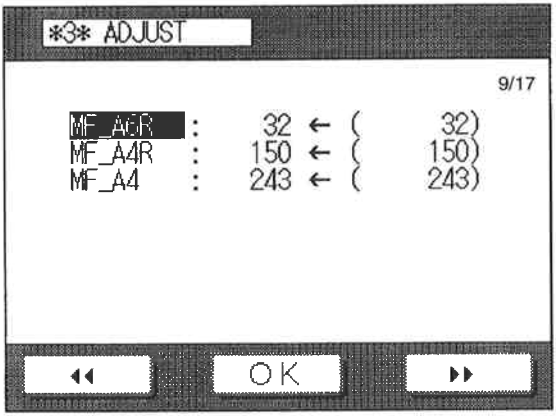
Item	Description	Settings	Remarks
C1-STMTR			100V model only
C1-A4R			100V model only
C2-STMTR			100V model only
C2-A4R			100V model only



```
*3* ADJUST
                                  8/17
C3_STMTR :    12 ← (      12)
C3_A4R   :   110 ← (     110)
C4_STMTR :    12 ← (      12)
C4_A4R   :   110 ← (     110)
```

Screen 3-8

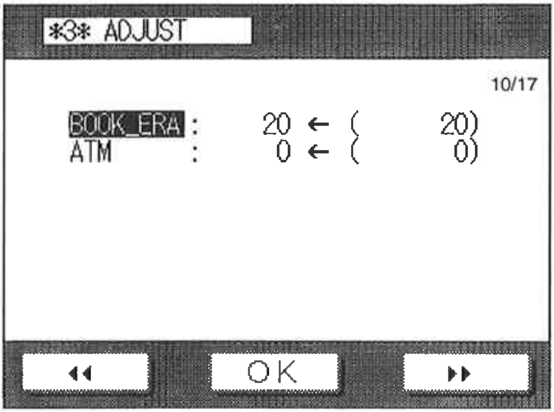
Item	Description	Settings	Remarks
C3-STMTR	Use it to fine-adjust and enter the paper width basic value (STMTR) for the cassette 3.	000~255	See p. 10-53.
C3-A4R	Use it to fine-adjust or enter the paper width basic value (A4R) for the cassette 3.	000~255	See p. 10-53.
C4-STMTR	Use it to fine-adjust or enter the paper width basic value (STMTR) for the cassette 4.	000~255	See p. 10-53.
C4-A4R	Use it to fine-adjust or enter the paper width basic value (A4R) for the cassette 4.	000~255	See p. 10-53.



```
*3* ADJUST
                                    9/17
   MF_A6R   :   32 ← (      32)
   MF_A4R   :  150 ← (     150)
   MF_A4    :  243 ← (     243)
```

Screen 3-9

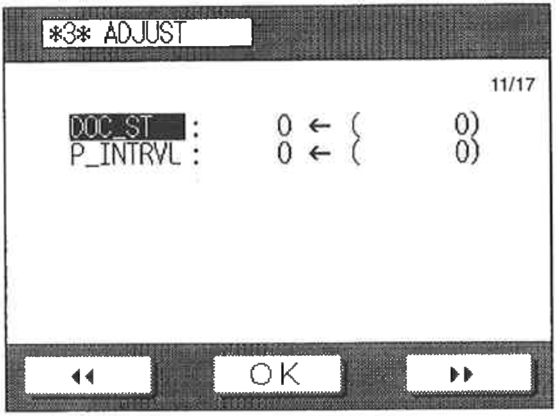
Item	Description	Settings	Remarks
MF-A6R	Use it to fine-adjust or enter the paper width basic value (A6R) for the multi-feeder.	000~255	See p. 10-53.
MF-A4R	Use it to fine-adjust or enter the paper width basic value (A4R) for the multi-feeder.	000~255	See p. 10-53.
MF-A4	Use it to fine-adjust or enter the paper width basic value (A4) for the multifeeder.	000~255	See p. 10-53.



```
*3* ADJUST
                                      10/17
BOOK_ERA :     20 ← (         20)
ATM      :      0 ← (          0)
```

Screen 3-10

Item	Description	Settings	Remarks
BOOK-ERA	Use it to adjust the margin for book frame erasing mode.	10~30	Unit:1 mm A higher setting will increase the margin.
ATM	Use it to set the operating environment (atmospheric pressure of the site of installation). 0:1 ~ 0.75 atm (up to an elevation of 2500 m) 1:0.75 ~ 0.70 atm (between 2500 and 3000 m) 2:0.70 ~ 0.65 atm (between 3000 and 3500 m)	0~2	Decrease the target potential for potential control to avoid leakage under a low atmospheric pressure.

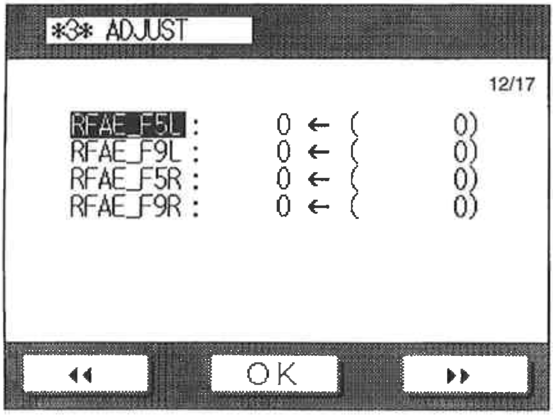


```
*3* ADJUST
                                   11/17
   DOC_ST   :     0 ← (       0)
   P_INTRVL :     0 ← (       0)
```

Screen 3-11

Item	Description	Settings	Remarks
DOC-ST	Use it to adjust the original stop position when the RDF is in use.	-1023~ 1023	Unit:0.5 mm The effective range is between -10 and +10; values outside the range will have no effect.
P-INTRVL *	Use it to adjust the sheet-to-sheet distance for the RDF (2-on-1 mode).	-1023~ 1023	Unit:0.5 mm The effective range is between -10 and + 10; values outside the range will have no effect.

* Used to adjust the sheet-to-sheet distance for page composition mode with the RDF in use. (The service manual shows how to make adjustments on the RDF; the same may be performed in the copier's service mode, by changing the setting instead of pressing the DIP switch.)


3 ADJUST

12/17

RFAE_F5L : 0 ← (0)
RFAE_F9L : 0 ← (0)
RFAE_F5R : 0 ← (0)
RFAE_F9R : 0 ← (0)

Screen 3-12

Item	Description	Settings	Remarks
RFAE-F5L (100V model only)	Use it to adjust the RDF (AE mode and left pick-up) scanning lamp reference ON voltage.	-1023~ 1023	A higher setting will make the slope less steep.
RFAE-F9L (100V model only)	Use it to adjust the RDF (AE mode and left pick-up) newspaper original intensity.	-1023~ 1023	A higher setting will make the slope steeper.
RFAE-F5R (100V model only)	Use it to adjust the RDF (AE mode and right pick-up) scanning lamp reference ON voltage adjustment.	-1023~ 1023	A higher setting will make the slope less steep.
RFAE-F9R (100V model only)	Use it to adjust the RDF (AE mode and right pick-up) newspaper original intensity.	-1023~ 1023	A higher setting will make the slope steeper.

Note:
Keep the following in mind for 'DOC-ST', 'P-INTRVL', and 'LA-SPEED' in RDF-relate service mode:

1. These items affect the values stored in the memory on the RDF controller PCB; therefore, initializing the copier's RAM will not clear these values, not requiring re-input.
2. Changes in these items will change the values stored in the memory on the RDF controller PCB, and inputs will not directly affect the values in the memory; the operation will be as follows:

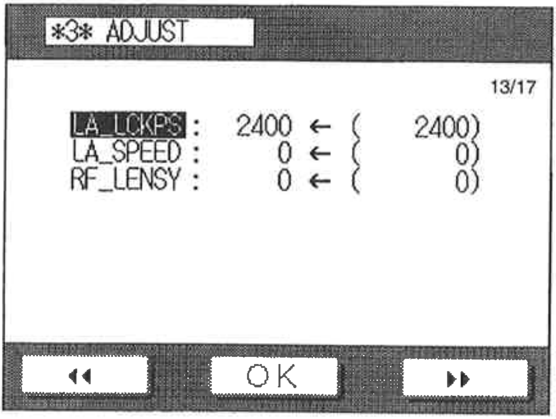
   Operation 1

   When 'DOC-ST $\overset{\text{NEW}}{5} \leftarrow \overset{\text{OLD}}{(2)}$' is entered, (5-2 = +3), causing the original stop position to shift by +3 units.

   Operation 2

   When 'P-INTRVL:-7 ← (-5)' is entered, {-7 - (-5) = -2}, causing the original stop position to shift by -2 units.

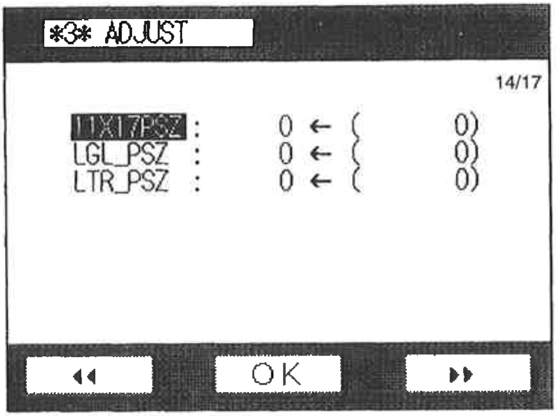
3. For these items, pick-up and delivery settings will be by the User Mode key (∗) on the copier's control panel instead of SW1 on the RDF controller PCB.



```
*3* ADJUST
                                13/17
LA_LCKPS :   2400 ← (     2400)
LA_SPEED :      0 ← (        0)
RF_LENSY :      0 ← (        0)
```

Screen 3-13

Item	Description	Settings	Remarks
LA-LCKPS (100V model only)	Use it to adjust the RDF (stream reading mode) image leading edge.	2300~ 2500	A higher setting will advance the timing at which the registration roller turns ON, thereby increasing the margin.
LA-SPEED (100V model only)	Use it to adjust the original feeding speed for stream reading.	-1023~ 1023	A higher setting will increase the speed, thereby reducing the image. About ±3 mm (6 mm total)
RF-LENSY (100V model only)	Use it to correct offset in Y direction of the lens when the RDF's right pick-up mode is used (i.e., to correct the displacement of the lens reference position in right pick-up mode in relation to left pick-up mode).	-50~50	A higher setting will increase the margin in stream reading, thereby shifting the copy image to the rear. Unit: 0.1 mm



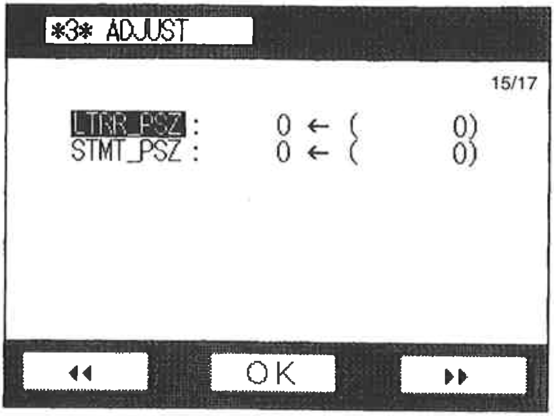
3 ADJUST

14/17

11X17PSZ : 0 ← (0)
LGL_PSZ : 0 ← (0)
LTR_PSZ : 0 ← (0)

Screen 3-14

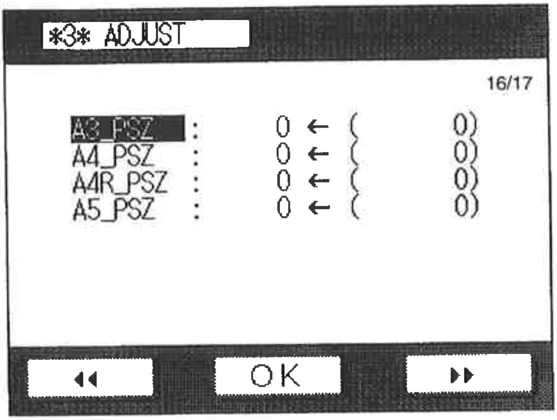
Item	Description	Settings	Remarks
11X17PSZ	Use it to fine-adjust the drive distance of the paper guide plate of the duplexing unit for each paper size. Use this mode if pick-up failure or skew movement occurs when paper is picked up from the duplexing unit in two-sided/overlay copying mode.	-10~+10	Step: 0.183 mm x 2 Each step will affect both front and rear paper guides so that a signal step will result in a change of 0.367 mm. (A negative value will make the distance smaller.)
LGL_PSZ			
LTR_PSZ			



```
*3* ADJUST
                                        15/17
LTRR_PSZ :        0 ← (         0)
STMT_PSZ :        0 ← (         0)
```

Screen 3-15

Item	Description	Settings	Remarks
LTRR_PSZ	Use it to fine-adjust the drive distance of the paper guide plate of the duplexing unit for each paper size. Use this mode if pick-up failure or skew movement occurs when paper is picked up from the duplexing unit in two-sided/overlay copying mode.	-10~+10	Step: 0.183 mm x 2 Each step will affect both front and rear paper guides so that a signal step will result in a change of 0.367 mm. (A negative value will make the distance smaller.)
STMT_PSZ			



3 ADJUST

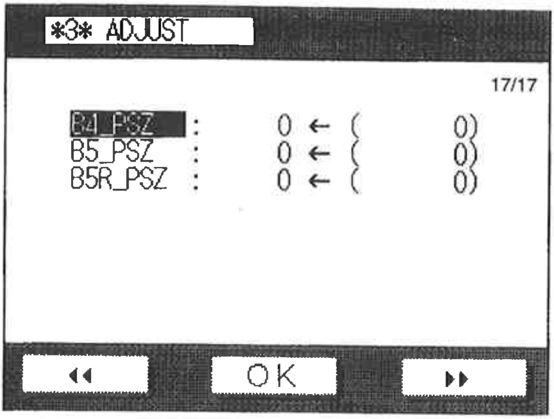
16/17

A3_PSZ : 0 ← (0)
A4_PSZ : 0 ← (0)
A4R_PSZ : 0 ← (0)
A5_PSZ : 0 ← (0)

Screen 3-16

Item	Description	Settings	Remarks
A3_PSZ	Use it to fine-adjust the drive distance of the paper guide plate of the duplexing unit for each paper size. Use this mode if pick-up failure or skew movement occurs when paper is picked up from the duplexing unit in two-sided/overlay copying mode.	-10~+10	Step: 0.183 mm x 2 Each step will affect both front and rear paper guides so that a signal step will result in a change of 0.367 mm. (A negative value will make the distance smaller.)
A4_PSZ			
A4R_PSZ			
A5_PSZ			

A negative value will make the distance smaller.
A single step represents a distance of 0.367 mm; since a single step will affect both front and rear, each step will result in a change of 0.183 × 2 mm.



B4_PSZ : 0 ← (0)
B5_PSZ : 0 ← (0)
B5R_PSZ : 0 ← (0)

Screen 3-17

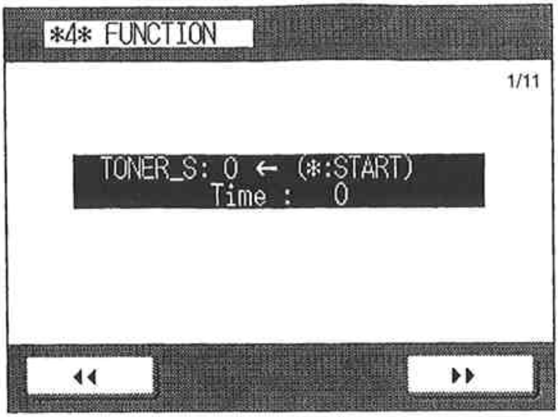
Item	Description	Settings	Remarks
B4_PSZ	Use it to fine-adjust the drive distance of the paper guide plate of the duplexing unit for each paper size. Use this mode if pick-up failure or skew movement occurs when paper is picked up from the duplexing unit in two-sided/overlay copying mode.	-10~+10	Step: 0.183 mm x 2 Each step will affect both front and rear paper guides so that a signal step will result in a change of 0.367 mm. (A negative value will make the distance smaller.)
B5_PSZ			
B5R_PSZ			

G. Function Mode (*4*)

Press the <</>> key to select the screen.

Press the item to highlight, and press the User Mode key (*) to start the operation.

Check to make sure that the machine is in standby state when executing any operations.

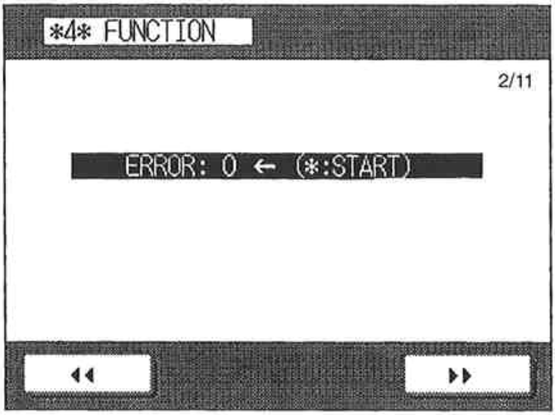


TONER_S: 0 ← (*:START)
Time : 0

Screen 4-1

Item	Description	Remarks
TONER-S	Use it for toner supply (at time of installation). The notation indicates the supply duration in sec: normally, 7 to 9 min (420 to 540 sec). Check to make sure that the developing assembly is installed properly and locked in place; then, press the OK key to start toner supply.	The operation will stop automatically.

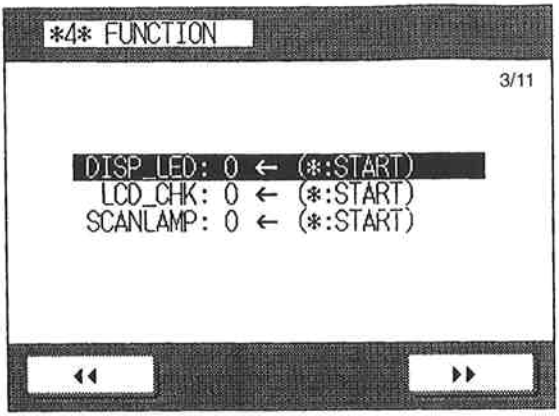
Note:
The message "Check the Developer" will appear in response to the first press on the * key. After making sure that the developing assembly has been installed, press the OK key on the touch panel and then the * key.



ERROR: 0 ← (*:START)

Screen 4-2

Item	Description	Remarks
ERROR	Use it to reset E000, E001, E002, E003, E05, E013, E020 and the jam history, error history, sorter jam, RDF jam, or alarm history. Resetting E000, however, will not reset the jam history.	

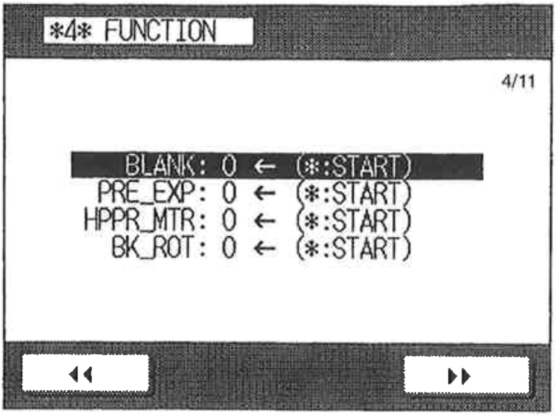


DISP_LED: 0 ← (*:START)
LCD_CHK: 0 ← (*:START)
SCANLAMP: 0 ← (*:START)

Screen 4-3

Item	Description	Remarks
DISP-LED	Use it to turn ON the LEDs on the control panel.*	
LCD-CHK	Use it to turn ON the LCD on the control panel. (The LCD back light will remain OFF for 3 sec and then return.)	
SCANLAMP	Use it to turn ON the scanning lamp. (The scanner cooling fan will also turn ON.)	The lamp will remain ON for 3 sec.

* : The Start key red LED,
The Start key green LED,
The Pre-Heat key LED,
The Interrupt key LED,
The User Mode key LED,
The Pilot Lamp LED will turn ON and OFF in sequence.



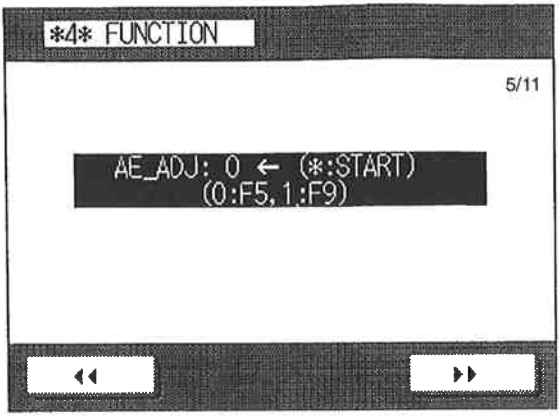
4 FUNCTION

4/11

BLANK: 0 ← (*:START)
PRE_EXP: 0 ← (*:START)
HPPR_MTR: 0 ← (*:START)
BK_ROT: 0 ← (*:START)

Screen 4-4

Item	Description	Remarks
BLANK	Use it to turn ON the blank exposure lamp.	The lamp will remain ON for 3 sec.
PRE-EXP	Use it to turn ON the pre-exposure LED lamp.	The lamp will remain ON for 3 sec.
HPPR-MTR	Use it to operate the hopper motor. (M10 and M11 will rotate simultaneously.)	The motor will operate for 3 sec.
BK-ROT	Use it to operate the developing cylinder.	The cylinder will operate for abut 2 min.

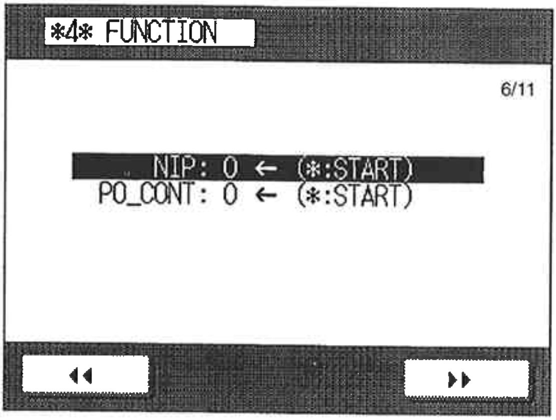

4 FUNCTION

5/11

AE_ADJ: 0 ← (*:START)
(0:F5,1:F9)

Screen 4-5

Item	Description	Remarks
AE-ADJ	Use it to specify how density measurement level automatic adjustment should be executed in AE mode: If set to 0, set F5 original. If set to 1, set F9 original.	



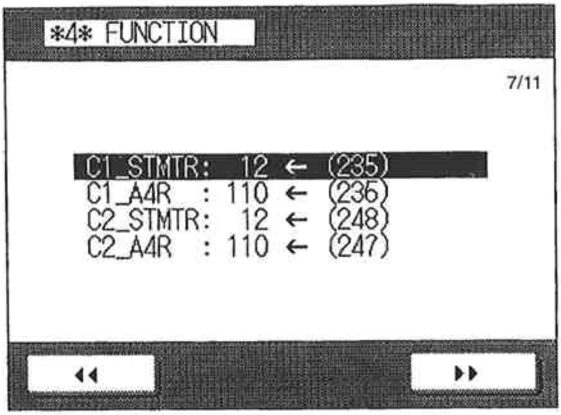
4 FUNCTION

6/11

NIP: 0 ← (*:START)
PO_CONT: 0 ← (*:START)

Screen 4-6

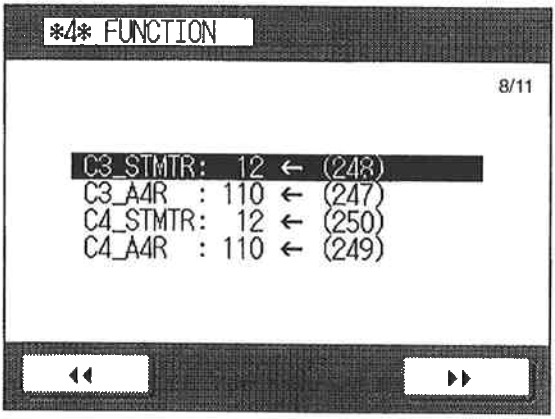
Item	Description	Remarks
NIP	Use it to specify how nip automatic measurement should be executed for the fixing roller. A solid black image will be created automatically and stopped at the fixing roller; in about 20 sec, automatic discharge will occur.	See p. 10-33.
PO-CONT	Use it to turn ON/OFF potential control.	1:OFF 0:ON



```
C1_STMTR:  12 ← (235)
C1_A4R  : 110 ← (236)
C2_STMTR:  12 ← (248)
C2_A4R  : 110 ← (247)
```

Screen 4-7

Item	Description	Remarks
C1-STMTR		100V model only.
C1-A4R		100V model only.
C2-STMTR		100V model only.
C2-A4R		100V model only.

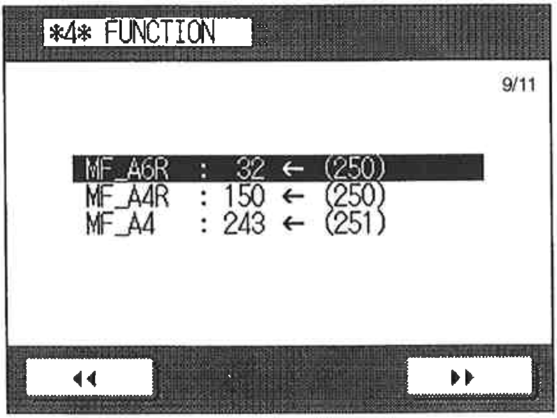


C3_STMTR: 12 ← (248)
C3_A4R   : 110 ← (247)
C4_STMTR: 12 ← (250)
C4_A4R   : 110 ← (249)

Screen 4-8

Item	Description	Remarks
C3-STMTR	Use it for automatic adjustment of paper width reference point 1 (STMTR) for cassette 3.	
C3-A4R	Use it for automatic adjustment of paper width reference point 2 (A4R) for cassette 3.	
C4-STMTR	Use it for automatic adjustment of paper width reference point 1 (STMTR) for cassette 4.	
C4-A4R	Use it for automatic adjustment of paper width reference point 2 (A4R) for cassette 4.	

* Slide out the cassette, set the paper width guide plate inside the cassette to suit the paper size, and slide in the cassette. Thereafter, select the item on the screen to read the paper width reference point.



4 FUNCTION

9/11

MF_A6R : 32 ← (250)
MF_A4R : 150 ← (250)
MF_A4 : 243 ← (251)

Screen 4-9

Item	Description	Remarks
MF-A6R	Use it for automatic adjustment of paper width reference point 1 (A6R) for the multifeeder.	
MF-A4R	Use it for automatic adjustment of paper width reference point 2 (A4R) for the multifeeder.	
MF-A4	Use it for automatic adjustment of paper width reference point 3 (A4) for the multifeeder.	

* Slide out the cassette, set the paper width guide plate inside the cassette to suit the paper size, and slide in the cassette. Thereafter, select the item on the screen to read the paper width reference point.

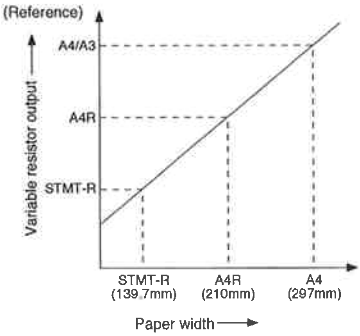
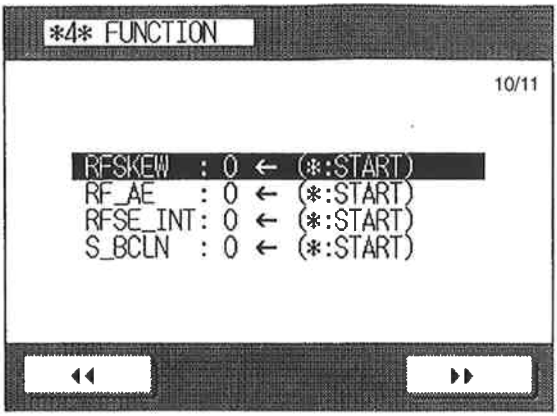


Figure 10-621

Note:
The value 'A6R' (width) is used as one of the basic values when the paper width detecting VR of the multifeeder is replaced.
However, the size label does not show "A6R," and the width guide will not click into position.
As a guide, keep in mind that A6R is the result of A4 paper folded into four with the width being 105 mm.

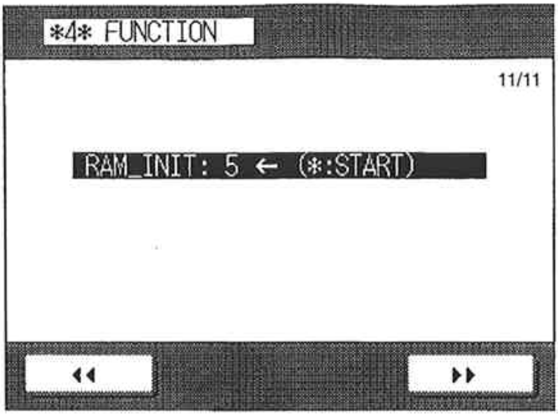


RFSKEW : 0 ← (*:START)
RF_AE : 0 ← (*:START)
RFSE_INT: 0 ← (*:START)
S_BCLN : 0 ← (*:START)

Screen 4-10

Item	Description	Remarks
RFSKEW	Use it to correct skew movement in the RDF.	
RF-AE	Use it for automatic adjustment of the RF AE sensor.	100V model only.
RFSE-INT	Use it to initialize the RDF sensor.	*
S-BCLN	Use it to clean the RDF separation belt.	

* Executing 'START' will keep the indication on the screen '0'. Refer to LEDs 1, 2, and 3 of the RDF controller PCB (flash in sequence or simultaneously) .



4 FUNCTION

11/11

RAM_INIT: 5 ← (*:START)

Screen 4-11

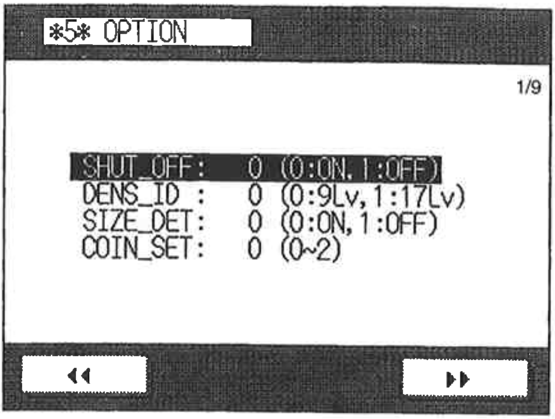
Item	Description	Remarks
RAM-INIT	Use it to initialize the RAM on the DC controller PCB.	After initialization, the Copy Start screen will appear.

H. Options Mode (*5*)

Press the <</>> key to select the screen.

Press the appropriate item to highlight; then, enter the appropriate value on the keypad.

Use user mode to set/re-set each mode.



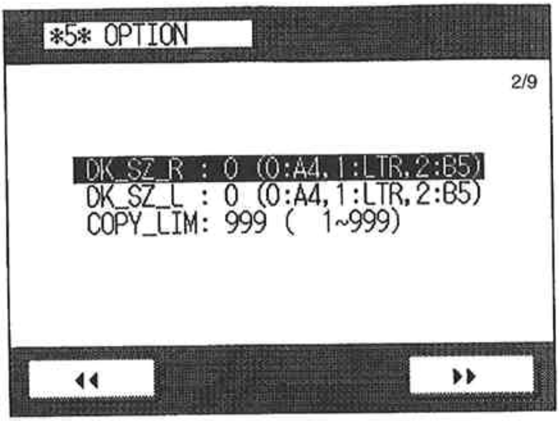
5 OPTION

1/9

SHUT_OFF: 0 (0:ON, 1:OFF)
DENS_ID : 0 (0:9Lv, 1:17Lv)
SIZE_DET: 0 (0:ON, 1:OFF)
COIN_SET: 0 (0~2)

Screen 5-1

Item	Description	Remarks
SHUT-OFF	Use it to turn ON/OFF the auto shut-off function.	1:OFF 0:ON
DENS-ID	Use it to switch copy density notation.	0:9-step 1:17-step
SIZE-DET	Use it to turn ON/OFF the size detection function.	1:OFF 0:ON
COIN-SET	Use it to switch between "coin" and "copy card" for the display of the control card on the control panel.	0:control card 1:coin 2:copy card

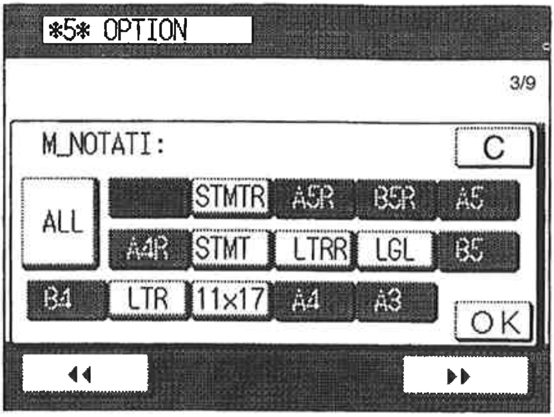


```
*5* OPTION
                                    2/9

DK_SZ_R : 0 (0:A4,1:LTR,2:B5)
DK_SZ_L : 0 (0:A4,1:LTR,2:B5)
COPY_LIM: 999 (  1~999)
```

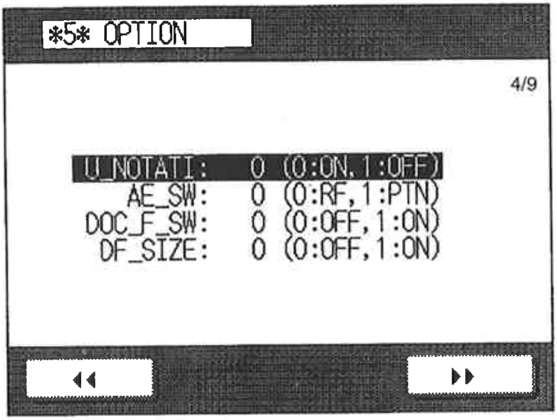
Screen 5-2

Item	Description	Remarks
DK-SZ-R	Use it to switch the paper sizes for the deck.	0:A4 1:LTR 2:B5
DK-SZ-L (Not used)	Use it to switch the paper size for the left deck.	0:A4 1:LTR 2:B5
COPY-LIM	Use it to set the copy count upper limit. (May be any number between 1and 999.)	
CALL-SW	1. You may use any available area within the current mode memory. 2. Use 'OPTION CALL SW' in service mode (✻5✻) 0 : Disable call function. (All will be used for mode memory.) 1~9 : Enable call for the settings (copying modes). The initial value is '0' and may be set to between '1' and '9'. 3. A call function may be recalled in the same way a mode memory is recalled. 4. The settings will be stored in response to a normal copy start (not after jam, alarm, interrupt, suspension). For instance, if the setting is '3', mode memory 7:most recent copying mode mode memory 8:second most recent copying mode counting from memory 7 mode memory 9:second most recent copying mode counting from memory 8 mode memory 1~6: functions as normal mode memory	


5 OPTION
3/9
M_NOTATI:
C
ALL
STMTR
A5R
B5R
A5
A4R
STMT
LTRR
LGL
B5
B4
LTR
11x17
A4
A3
OK
◀◀
▶▶

Screen 5-3

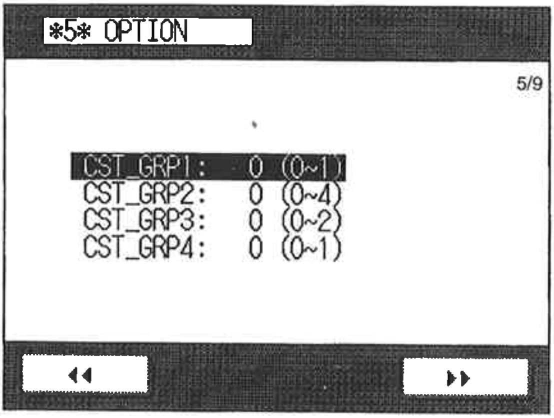
Item	Description	Remarks
M-NOTATI	Use it to change the available paper size listing of the multifeeder.	



```
U_NOTATI:  0 (0:ON,1:OFF)
   AE_SW:  0 (0:RF,1:PTN)
DOC_F_SW:  0 (0:OFF,1:ON)
 DF_SIZE:  0 (0:OFF,1:ON)
```

Screen 5-4

Item	Description	Remarks
U-NOTATI	Use it to switch the notation for universal size papers: 0: indicates U1, U2, U3, U5 1: indicates the size selected under 'CST-GRP'	
AE-SW	Use it to specify whether to use the RDF's AE or the copier's AE. (Normally, the RDF's AE will be used whenever the RDF is used; select the copier's AE if the RDF's AE fails for some reason.) Note that stream reading will not be available when the RDF's AE is not used.	100V model only. 1: Copier 0: RDF
DOC-F-SW	Use it to enable/disable stream reading.	100V model only. 0: Enable 1: Disable
DF-SIZE	Use it to specify auto paper selection for a stack of mixed AB- and Inch-configuration papers. Enable it according to the model used; detection will occur, for instance, when A4 and LTR paper are used at the same time.	0: Enable detection 1: Disable detection

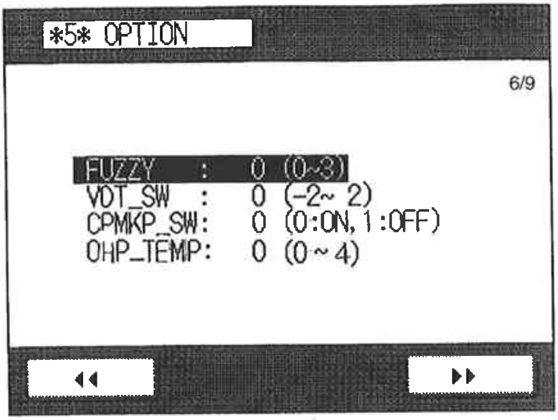

5 OPTION

5/9

CST_GRP1: 0 (0~1)
CST_GRP2: 0 (0~4)
CST_GRP3: 0 (0~2)
CST_GRP4: 0 (0~1)

Screen 5-5

Item	Description	Remarks
CST-GRP1	Use it to select the type of notation when 'U-NOTATI' for universal size paper is set to '1'. 0: G LTR (indicated as LTR) 1: K LGL (indicated as U)	
CST-GRP2	Use it to select the type of notation when 'U-NOTATI' for universal size paper is set to 1'. 0: FLSC (indicated as FLSC) 1: OFI (indicated as OFI) 2: E-OFI (indicated as OFI) 3: A-LGL (indicated as LGL) 4: S-OFI (Indicated as OFI)	
CST-GRP3	Use it to select the type of notation when 'U-NOTATI' for universal size paper is set to '1'. 0: G LGL (indicated as LGL) 1: FOLI (indicated as FOLI) 2: A FLS (indicated as FLSC)	
CST-GRP4	Use it to select the type of notation when 'U-NOTATI' for universal size paper is set to '1'. 0: LTR (indicated as LTR) 1: A LTR (indicated as LTR)	



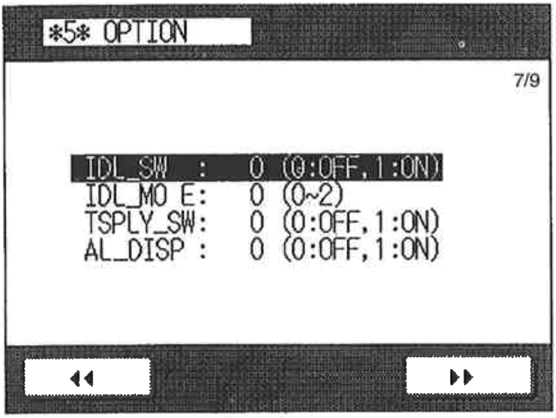
5 OPTION

6/9

FUZZY : 0 (0~3)
VDT_SW : 0 (-2~ 2)
CPMKP_SW: 0 (0:ON, 1:OFF)
OHP_TEMP: 0 (0~4)

Screen 5-6

Item	Description	Remarks
FUZZY	Use it for controlling (fuzzy) the current applied to the pre-transfer, transfer, and separation charging assemblies according to the ambient temperature. You may disable control and opt for one of three environment settings.	0: Fuzzy control ON 1: If the image is light under high humidity condition 2: If the humidity condition is normal 3: If copy paper comes into contact with the cleaner separation claw under low humidity condition Select '0', '1', '2', or '3' on the keypad, and press the ✻ key.
VDT-SW	Use it to switch the dark area target potential (VDT) for potential control if the solid areas of copy images are too light.	-2: for lighter images -1: for somewhat lighter images 0: default +1: for somewhat darker images +2: for darker images
CPMKP-SW	Use it to turn ON/OFF the special sequence in which the copying speed is decreased to maintain fixing of copy images in a low-temperature environment.	0: ON 1: OFF
OHP-TEMP	Use it to lower the fixing temperature by a specific range.	0: Normal control temp 1: –5°C 2: –10°C 3: –15°C 4: –20°C



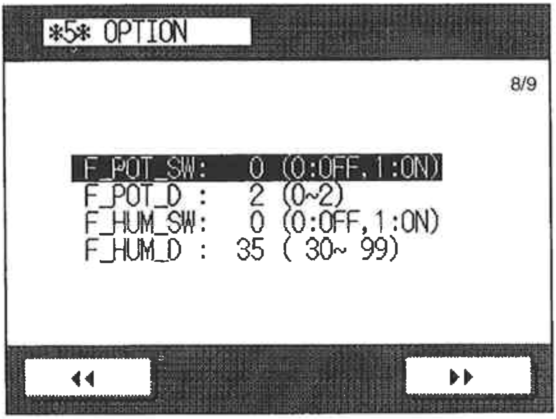
5 OPTION

7/9

```
IDL_SW   :  0 (0:OFF,1:ON)
IDL_MODE :  0 (0~2)
TSPLY_SW :  0 (0:OFF,1:ON)
AL_DISP  :  0 (0:OFF,1:ON)
```

Screen 5-7

Item	Description	Remarks
IDL-SW	Use it to turn ON/OFF the drum idle rotation mode to prevent distortion of images under high-humidity conditions or light images at time of power-on (e.g., in the morning).	0:OFF (no idle rotation) 1:ON (control by IDL-MODE setting)
IDL-MODE	Use it to switch the idle rotation mode when the power switch is turned ON with the surface temperature of the fixing roller 75°C or less. If the humidity increases at times and causes image faults, select '1' or '2' even in a normal operating environment.	0:automatic control using humidity sensor data 1:idle rotation for 2 min 2:idle rotation for 5 min
TSPLY-SW	Use it to switch toner supply in reference to the humidity sensor.	0:control toner supply motor using humidity data Medium to low humidity: ON for 2 sec OFF for 1 sec High humidity: ON for 4 sec OFF for 2 sec 1:toner supply motor ON for 2 sec and OFF for 1 sec
AL-DISP	Use it to specify whether the indication of the web length alarm and the waste toner full alarm should be in service mode only or at all times.	0:in service mode only 1:at all times



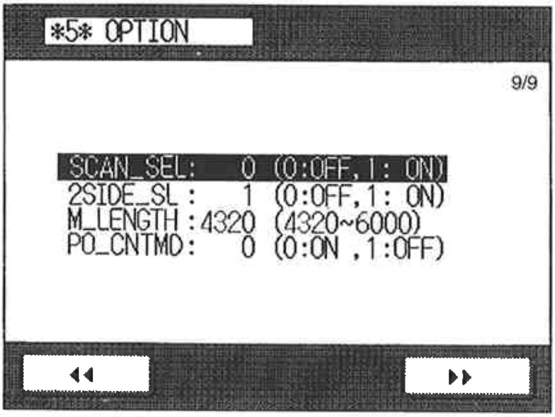
5 OPTION

8/9

```
F_POT_SW:   0 (0:OFF,1:ON)
F_POT_D :   2 (0~2)
F_HUM_SW:   0 (0:OFF,1:ON)
F_HUM_D :  35 ( 30~ 99)
```

Screen 5-8

Item	Description	Remarks
F-POT-SW	Enter '1' if transfer separation faults occur because of an error (faulty) in the potential sensor. Use it as a tentative remedy until replacing the potential sensor.	
F-POT-D	Use it when changing the setting 'F-POT-SSW' (0 → 1). 0: If the user uses text-oriented originals. 1: If the user uses photo-oriented originals. 2: If re-transfer (white spots at points 50 mm around the leading edge) occurs. The degree of separation current is in the order of 0 > 1 > 2.	
F-HUM-SW	Enter '1' if an error (fault) is found in the environment sensor (so that the copier will assume the input of F-HUM-D as the output of the humidity sensor). Use it as a tentative remedy until replacing the environment sensor.	
F-HUM-D	Enter an approximate humidity value of the site of installation; between 30% and 99%.	Factory default : 35



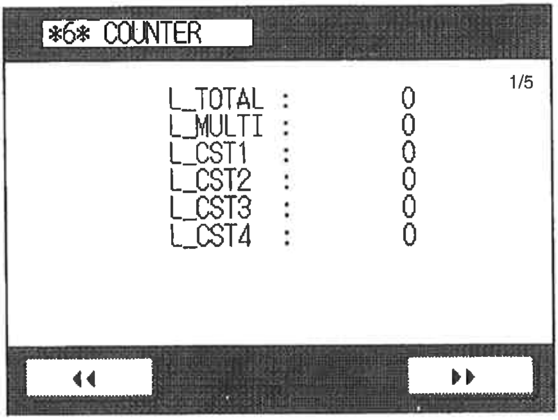
SCAN_SEL: 0 (0:OFF, 1: ON)
2SIDE_SL : 1 (0:OFF, 1: ON)
M_LENGTH : 4320 (4320~6000)
PO_CNTMD: 0 (0:ON , 1:OFF)

Screen 5-9

Item	Description	Remarks
SCAN_SEL	Use it to turn ON/OFF the original size detection function for RDF non-default original sizes. ON: So that an assumed original size will be used if the size of an original is not one of the defaults for such modes as require identification of original size (APS, AMS, frame erasing).	0: OFF 1: ON
2SIDE_SL	Use it to select two-sided mode (one-sided to two-sided) as standard copying mode. (If '0' is selected, you must initialize the standard mode in user mode for the notation 'two-sided' to appear.)	0: OFF 1: ON
M-LENGTH	Use it to register a non-default size paper for multiple manual feeding. **Note:** Copying is allowed only when the copier is not equipped with a sorter. (Otherwise, a sorter jam would occur because of a length error.)	432 to 600 mm (in 0.1 mm)
PO-CNTMD	Use it to specify whether to turn ON/OFF potential control for the first normal copying run in 10/60 min after standby (following power-on).	0: ON 1: OFF

I. Counter Mode (*6*)

- Press the <</>> key to select the screen.
- Press the item to highlight; then, depressing the service switch while the screen is on the display, press the C key on the control panel to reset the counter reading to '00000000'.



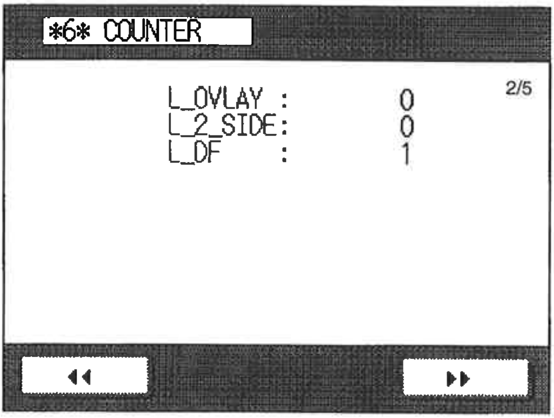
6 COUNTER

1/5

```
L_TOTAL :    0
L_MULTI :    0
L_CST1  :    0
L_CST2  :    0
L_CST3  :    0
L_CST4  :    0
```

Screen 6-1

Item	Description	Remarks
L-TOTAL	Use it for the large-size total copy counter. (paper length 300 mm or more or non-default size)	Returns to '00000000' after '99999999'.
L-MULTI	Use it for the large-sized multifeeder copy counter. (paper length 300 mm or more or non-default size)	Returns to '00000000' after '99999999'.
L-CST1	Use it so that copies from the paper deck will not be counted but copies from the large-size cassette 1 will be counted. (paper length 300 mm or more or non-default size)	Returns to '00000000' after '99999999'.
L-CST2	Use it so that copies from the paper deck will not be counted but copies from the large-size cassette 2 will be counted. (paper length 300 mm or more or non-default size)	Returns to '00000000' after '99999999'.
L-CST3	Use it so that copies from the large-size cassette 3 will be counted. (paper length 300 mm or more or non-default size)	Returns to '00000000' after '99999999'.
L-CST4	Use it so that copies from the large-size cassette 4 will be counted. (paper length 300 mm or more or non-default size)	Returns to '00000000' after '99999999'.



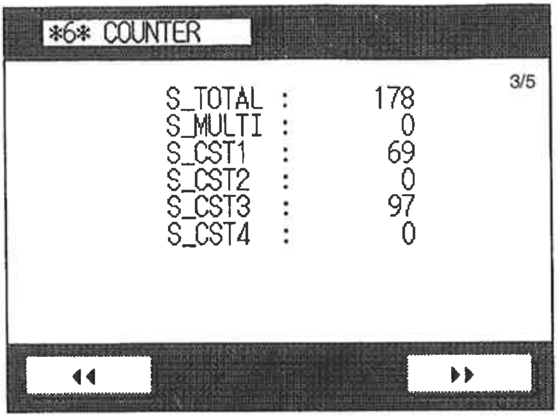
6 COUNTER

2/5

L_OVLAY : 0
L_2_SIDE: 0
L_DF : 1

Screen 6-2

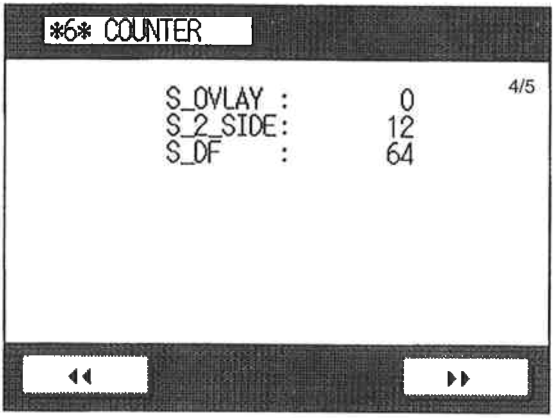
Item	Description	Remarks
L-OVERLAY	Use it so that the 2nd sides of large-size overlay copies will be counted. (paper length 300 mm or more or non-default size)	Returns to '00000000' after '99999999'.
L-2-SIDE	Use it so that the 2nd sides of large-size two-sided copies will be counted. (paper length 300 mm or more or non-default size)	Returns to '00000000' after '99999999'.
L-DF	Use it so that large-size originals will be counted. (paper length 300 mm or more or non-default size)	Returns to '00000000' after '99999999'.



```
*6* COUNTER
                                        3/5
        S_TOTAL  :        178
        S_MULTI  :          0
        S_CST1   :         69
        S_CST2   :          0
        S_CST3   :         97
        S_CST4   :          0
```

Screen 6-3

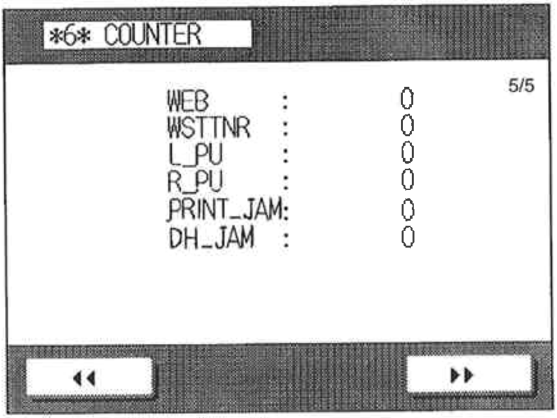
Item	Description	Remarks
S-TOTAL	Small-size total copy counter (paper length 300 mm or less)	Returns to '00000000' after '99999999'.
S-MULTI	Small-size multifeeder copy counter (paper length 300 mm or less)	Returns to '00000000' after '99999999'.
S-CST1	Small-size cassette 1/right deck pick-up copy counter (paper length 300 mm or less)	Returns to '00000000' after '99999999'.
S-CST2	Small-size cassette 2 pick-up copy counter (paper length 300 mm or less) (100V model only)	Returns to '00000000' after '99999999'.
S-CST3	Small-size cassette 3 pick-up copy counter (paper length 300 or less)	Returns to '00000000' after '99999999'.
S-CST4	Small-size cassette 4 pick-up copy counter (paper length 300 or less)	Returns to '00000000' after '9999999'.



S_OVLAY : 0
S_2_SIDE: 12
S_DF : 64

Screen 6-4

Item	Description	Remarks
S-OVERLAY	Small-size overlay 2nd side copy counter (paper length 300 mm or less)	Returns to '00000000' after '99999999'.
S-2-SIDE	Small-size 2nd side 2-sided copy counter (paper length 300 mm or less)	Returns to '00000000' after '99999999'.
S-DF	Small size original counter (paper length 300 mm or less)	Returns to '00000000' after '99999999'.



```
*6* COUNTER
                                   5/5
        WEB       :       0
        WSTTNR    :       0
        L_PU      :       0
        R_PU      :       0
        PRINT_JAM:        0
        DH_JAM    :       0
```

Screen 6-5

Item	Description	Remarks
WEB	Copy counter after replacement of the fixing cleaning belt (An alarm will be issued at the start of service mode after making 250,000 copies.)	Returns to '00000000' after '99999999'.
WSTTNR	Copy counter after disposal of the waste toner from the waste toner case (An alarm will be issued at the start of service mode after making 250,000 copies.)	Returns to '00000000' after '99999999'.
L_PU*	RDF left pick-up counter	Returns to '00000000' after '99999999'.
R_PU*	RDF right pick-up counter (100V model only.)	Returns to '00000000' after '99999999'.
PRINT-JAM	Copier/sorter jam counter	Returns to '00000000' after '99999999'.
DH-JAM	Feeder jam counter	Returns to '00000000' after '99999999'.

[*] In view of such durables as requiring replacement by pick-up source (e.g., RDF separation pad).

Incrementing the Counter Reading

① TOTAL
- For the 1st side of overlay/2-sided copies, when paper is stacked on the holding tray.
- For one-sided copies and the 2nd side of overlay/2-sided copies, when the paper is discharged outside the machine. (If a sorter is installed, when the paper is discharged to the sorter bin.)

② OVERLAY, 2_SIDE
- When the paper (overlay/2-sided copy) is discharged outside the machine.

③ MULTI, CST
- When the copy paper picked up from each of these sources is discharged outside the machine.
- For the 1st side of an overlay/2-sided copy, when the paper is stacked on the holding tray.

④ RDF
- When the size of the original is identified after picking it up in the RDF.

VIII. SELF DIAGNOSIS

The microprocessor of the machine's DC controller is equipped with a function that checks the condition of the machine (particularly the condition of its sensors); it will indicate an error code on the control panel upon detection of an error.

A. Copier

Code	Cause	Description
E000	• Main thermistor (TH1; poor contact, open circuit) • Fixing heater (H1, H2; open circuit) • Thermal switch (TS1; open circuit) • SSR (faulty) • DC controller PCB (faulty) • Sub thermistor (TH2; poor contacrt; open circuit i.e., the power switch turns off in about 5 sec after 'E000' is indicated.)	• The temperature of the upper fixing roller does not reach 70°C within 3 min 30 sec after power-on.
E001	• Main thermistor (TH1; short circuit) • SSR (faulty) • Sub thermistor (TH2; overheating) • DC controller PCB (faulty)	• The temperature of the upper fixing roller exceeds 230°C for 2 sec or more.
E002	• Main thermistor (TH1; poor contact, open circuit) • Fixing heater (H1, H2; open circuit) • Thermal switch (TS1; open circuit) • SSR (faulty) • DC controller PCB (faulty)	• The temperature of the upper fixing roller does not reach 100°C within 2 min after it has exceeded 70°C. • The temperature of the upper fixing roller does not reach 150°C within 2 min after it has exceeded 100°C.
E003	• Main thermistor (TH1; poor contact, open circuit) • Fixing heater (H1, H2; open circuit) • SSR (faulty) • DC controller PCB	• The temperature of the upper fixing roller is 70°C or less for 2 sec or more after it has reached 100°C.
E004	• SSR (faulty) • DC controller PCB (faulty)	• An open circuit is detected in the SSR used to drive the fixing heater.
E005	• Cleaning belt (fixing assembly; taken up) • Cleaning belt sensor (PS11; faulty) • DC controller PCB (faulty)	• The take-up length of the cleaning belt inside the fixing assembly exceeds a specific value.
E006	• Connector (fixing assembly rear; poor contact) • DC controller PCB (faulty)	• The fixing feeding assembly has become displaced during copying operation.
E010	• Main motor (M1; faulty) • DC controller PCB (faulty)	• Clock pulses (2 or more) are not generated within 1 sec after the main motor drive signal has been generated.

Code	Cause	Description
E013	• Waste toner feeding screw (faulty) • DC controller PCB (faulty)	• The waste toner feeding screw cannot rotate, and the detecting switch (MSW4) has been pressed a multiple number of times within a specific period of time.
E015 Note 2	• Pick-up motor (M2; faulty) • DC controller PCB (faulty)	• Clock pulses (2 or more) are not generated within 1 sec after the pick-up motor drive signal has been generated.
E020	• Hopper motor (M10, M11; faulty) • Developing assembly toner level detection circuit (faulty) • Hopper toner level detection circuit (faulty) • DC controller PCB (faulty) • Hopper connector (not connected)	• The toner supply signal remains '0' (toner absent) for 2 min or more during copying operation. • The toner supply signal does not go '1' in 10 min when toner supply sequence is initiated at time of installation.
E030	• Total copy counter (open circuit) • DC controller PCB (faulty)	• An open circuit is detected in the total copy counter when the toner copy counter drive is OFF.
E031	• Option counter (open circuit) • DC controller PCB (faulty) • Vertical path drive electromagnetic clutch (C215; open circuit in harness)	• An open circuit is detected in the option counter when the option counter drive is OFF.
E050	• Holding tray X home position sensor (PS21; faulty) • Holding tray X motor (M8; faulty) • DC controller PCB (faulty)	• The holding tray X home position signal (HTXHP) is not generated within 4 sec when the holding tray X motor (M8) drive signal is being generated. • The holding tray X home position signal (HTXHP) is generated for 2 sec or more when the holding tray X motor (M8) drive signal is being generated.
E051	• Holding tray Y home position sensor (PS20; faulty) • Holding tray Y motor (M9; faulty) • DC controller PCB (faulty)	• The holding tray Y home position signal (HTYHP) is not generated within 4 sec when the holding tray Y motor (M9) drive signal is being generated. • The holding tray Y home position signal (HTYHP) is generated for 2 sec or more when the holding tray Y motor (M9) drive signal is being generated.

Code	Cause	Description
E203	• Scanner home position sensor (PS1; faulty) • DC controller PCB (faulty)	• The scanner home position signal (SCHP) is generated for 0.5 sec or more when the scanner motor (M3) drive signal is being generated.
(E202) No code indication; keys are locked; Note 2.	• Scanner motor (M3; faulty) • Scanner home position sensor (PS1; faulty) • DC controller PCB (faulty)	• The scanner home position signal (SCHP) is not generated within 10 sec after the power switch or the Copy Start key has been turned ON.
(E204) No code indication; keys are locked; Note 2.	• Scanner motor (M3; faulty) • Scanner original leading edge sensor (PS3, PS4; faulty) • DC controller PCB (faulty)	• The scanner leading edge signal (SCDP1) is not generated within 0.8 sec after the scanner starts to move forward. • The scanner leading edge signal (SCDP2) is not generated within 1.0 sec after the scanner starts to move forward. (100V model only)
E210	• Lens X home position sensor (PS6; faulty) • Lens X motor (M4; faulty) • DC controller PCB (faulty)	• The lens X home position signal (LXHP) is not generated within 9 sec after the power switch or the Copy Start key has been pressed. • The lens X home position signal (LXHP) is generated for 2 sec or more.
E212	• Lens Y home position sensor (PS7; faulty) • Lens Y motor (M5; faulty) • DC controller PCB (faulty)	• The lens Y home position signal (LYHP) is not generated within 9 sec after the power switch or the Copy Start key is pressed. • The lens Y home position signal (LYHP) is generated for 2 sec or more.
E213 (100V model only)	• Scanner lock sensor (PS48; faulty) • Scanner locking solenoid (SL1; faulty) • DC controller PCB (faulty)	• The scanner lock sensor signal (SCLK) is not generated within a specific period of time after scanner locking is initiated in stream reading mode. • The scanner doe not stop at the scanner original leading edge 2 sensor (PS4).
E220	• Lamp regulator (faulty) • PC controller PCB (faulty)	• The scanning lamp turns ON during standby. • The scanning lamp turns OFF during copying. • The lamp ON detection signal (CVRON) is generated even when the scanning lamp ON signal (LAON) is '0'.

Code	Cause	Description
E240	• DC controller PCB (faulty)	• An error has occurred in the communication between the master (Q156) and the slave (Q140) in the microprocessor on the DC controller PCB.
E243	• DC controller PCB (faulty) • Control panel PCB (faulty)	• An error has occurred in the communication between the master (Q156) on the microprocessor on the DC controller PCB and the slave (Q140) in the microprocessor on the control panel PCB.
E710	• DC controller PCB (faulty)	• The RAM (Q136, Q137, Q138, Q162) on the DC controller PCB cannot be initialized at power-on.
E711	• DC controller PCB (faulty)	• The RAM (Q136, Q137, Q138, Q162) on the DC controller PCB goes out of order after power-on.
E712	• RDF controller PCB (faulty) • Connector (poor contact) • 24V power supply (faulty)	• The communication IC on the RDF controller PCB goes out of order.
E713	• Sorter controller PCB (faulty) • Connector (poor contact) • 24V power supply (faulty)	• The communication IC on the sorter controller PCB goes out of order.
E800	• Auto power-off circuit (open circuit) • DC controller PCB (faulty)	• An open circuit is detected in the auto power-off circuit. • The auto power-off signal has occurred twice or more within 2 sec.
E802	• Auto power-off circuit (faulty) • DC controller PCB (faulty)	• The relay (RY401) in the power supply unit does not operate in response to the auto power-off signal.

Caution:

1. When the self diagnosis function has turned ON, you can reset the machine by turning its power switch OFF once.
   E000, E001, E002, E003, E004, E005, E013, or E020 is not reset by turning OFF the power switch; this is to prevent the user from casually resetting the machine when the thermistor has an open circuit, since such would overheat and damage the fixing roller and would cause overflowing of toner from the hopper.
   For E000 through E003, the power switch will automatically turn off in about 20 sec when it is turned on without resetting the copier. In the case of an open circuit in the sub thermistor (TH2), however, the power switch will turn off in about 5 sec after 'E000' is indicated.
   To clear E000, E001, E002, E003, E004, E005, E013 or E020, you must clear the data in the RAM on the DC controller PCB as follows:
   1) Start service mode (✱4✱).
   2) Press the ◀◀/▶▶ key to select 'ERROR'.
   3) Press the OK key to clear the E code.
   4) The message display on the control panel will be refreshed, and the copy mode screen will return.
2. E015, E202, or E204 may be checked under 'B-ERR1', 'B-ERR2', or 'B-ERR3' in service mode (✱1✱).

B. RDF Self Diagnosis

Code	Cause	Description
E400	• Data communication with copier (faulty)	• The communication is monitored at all times, and this error is detected if the communication is disrupted for 5 sec or more.
E401	• Pick-up motor (M1; fails to rotate) • Pick-up roller sensor (S5; faulty)	• A flag is attached to the spindle of the pick-up motor (M1), and the rotation of the motor is monitored with reference to the flag blocking the pick-up roller sensor (S5). This error is detected when S5 does not turn on and off twice or more with 1 sec.
E402	• Belt motor (M3; fails to rotate) • Belt motor clock sensor (S10; faulty)	• The number of belt clock pulses within 200 msec is below a specific number.
E403	• Feeding motor (M2; fails to rotate) • Feeding motor clock sensor (S9; faulty)	• The number of feeding motor clock pulses within 200 ms is below a specific number.
E411	• Original tray paper sensor (S1; faulty) • Registration sensor (S3; faulty)	• The output of the sensor is 2.3 V or more in the absence of paper.

Note:
When the self diagnosis mechanism has turned on, turn off and then on the power switch to reset.
You may continue to make copies even when the RDF has gone out of order; simply disconnect the lattice connector from the RDF, open the RDF, and place the original on the copyboard glass.

C. Sorter Self Diagnosis

Code	Cause	Description
E500	• CPU or communication IC	• An error has occurred in the communication between the sorter and the copier.
E510	• Feeding motor (fails to rotate) • Feeding guide up/down mechanism (e.g., interference)	• The lock signal from the motor is off for a specific period or more.
E522	• Push bar motor (fails to rotate)	• The operation does not end within a specific period after the motor drive signal has been generated.
E523	• Reference wall motor (fails to rotate)	• The operation does not end within a specific period after the motor drive signal has been generated.
E524	• Multiguide motor (fails to operate)	• The operation does not end within a specific period after the motor drive signal has been generated.
E525	• Bin paper sensor automatic adjustment (faulty)	• Automatic adjustment of the bin paper sensor cannot be executed; or, there is an error in the adjustment value.
E526	• Bin paper sensor automatic adjustment (faulty)	• Automatic adjustment of the bin paper sensor cannot be executed; or, there is an error in the adjustment value.
E530	• Guide bar drive motor (fails to rotate)	• The motor does not stop operation within a specific period of time after the motor drive signal has been generated.
E531	• Stapler unit drive motor (fails to rotate)	• The motor does not stop to operate within a specific period after the motor drive signal has been generated. • The clock signal is absent from the clock sensor of the motor within a specific period. • The input signal from the drive home position sensor remains unchanged for a specific period.

Sorter

- Error Indications, Error Types, and Timing of Detection

Code	Cause	Description
E532	• Stapler unit drive motor (fails to rotate)	• The operation does not end within a specific time after the motor drive signal has been generated.
E533	• Stapler internal paper sensor (faulty adjustment)	• The stapler internal automatic adjustment mechanism has failed or an error has occurred in the automatic adjustment value.
E540	• Bin shift motor (fails to rotate)	• The operation does not end within a specific period after the motor drive signal has been generated. • Clock signals from the clock sensor of the motor are absent for a specific period. • The input signal from the lead cam position sensor does not change for a specific period.
E550	• Power supply (faulty)	• 24 VP is absent during the copier's initial rotation or when the Copy Start key is pressed.

Resetting

When the copier is making a copy,

① The copier indicates 'Jam'.

② After jam resetting, the copier indicates 'Turn On the Power'.

③ After the power has been turned off and then on, the copier runs a self check, and will reset itself if the results are good. (If the results are not good, it will enter "down" state* , indicating 'E5XX' on its control panel.)

When the copier is not making a copy,

① The copier indicates 'Turn On the Power'.

② After the power has been turned off and then on, the copier runs a self check, and will reset itself if the results are good. (If the results are not good, it will enter "down" state* , indicating 'E5XX' on its control panel.)

- In "down" state,

① The copier indicates 'E5XX'.
You can disconnect the sorter and continue to make copies † (as long as you are not using a function which requires a sorter).
If you select a mode which requires a sorter, the copier will indicate 'Mode Is Not Available'.
The copier will run a self check and will reset itself if the results are good.

* A state in which an 'E' indication is displayed.

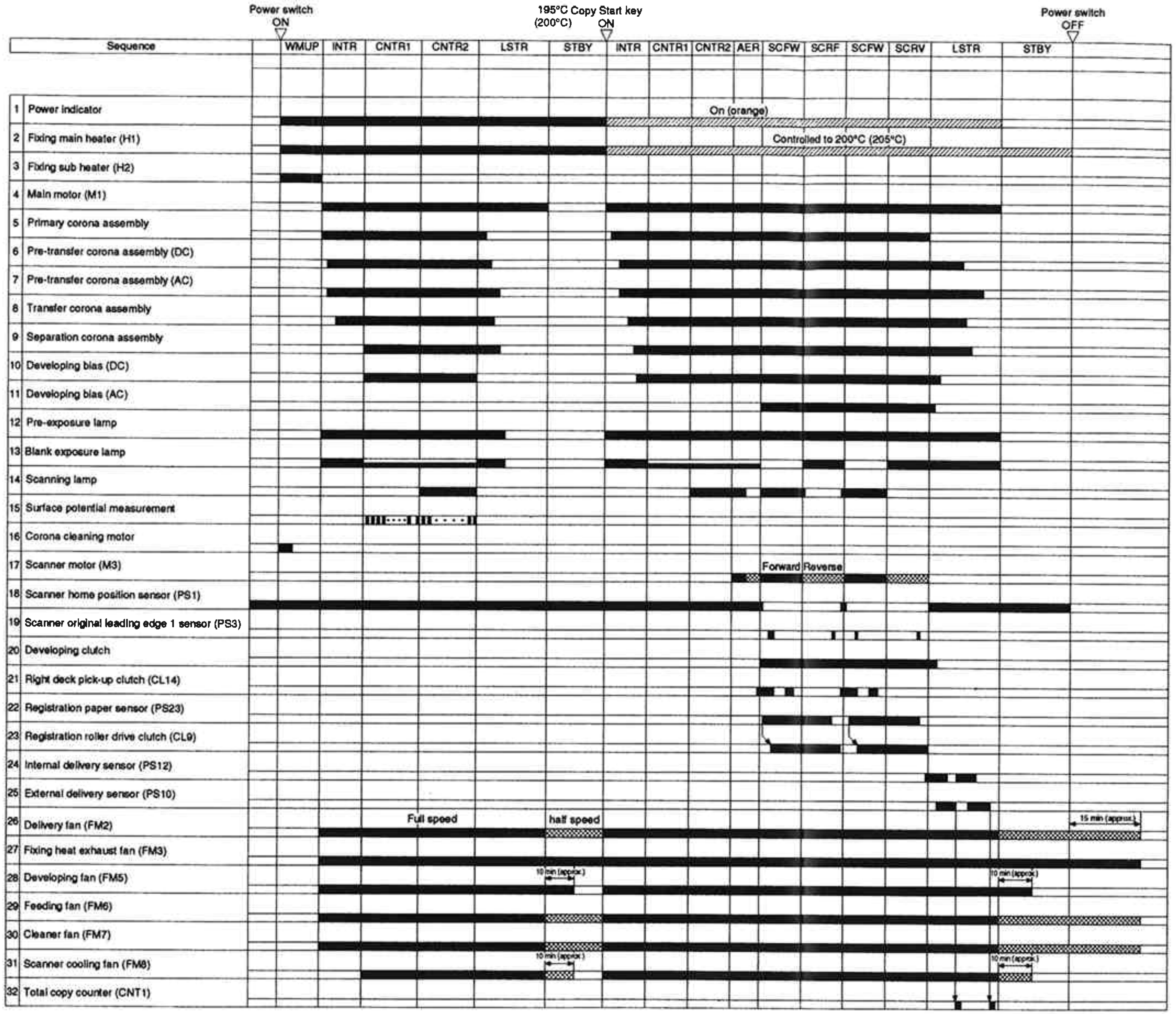
† You need not detach the sorter from the copier.

APPENDIX

A. GENERAL TIMING CHART A-1
B. SIGNALS AND ABBREVIATIONS ...A-2
C. GENERAL CIRCUIT DIAGRAM....A-5
D. RDF-H1 GENERAL CIRCUIT DIAGRAM.......................................A-7
E. SPECIAL TOOLS LIST A-9
F. SOLVENTS AND OILS..................A-10

A. GENERAL TIMING CHART

• A4, 2 Copies, Continuous, Paper Deck



B. SIGNALS AND ABBREVIATIONS

What follows below is a list of signals and abbreviations used in the chapters of the manual and circuit diagrams. The abbreviations within parentheses represent analog signals, which cannot be expressed in terms of '1' or '0'.

1. Signals

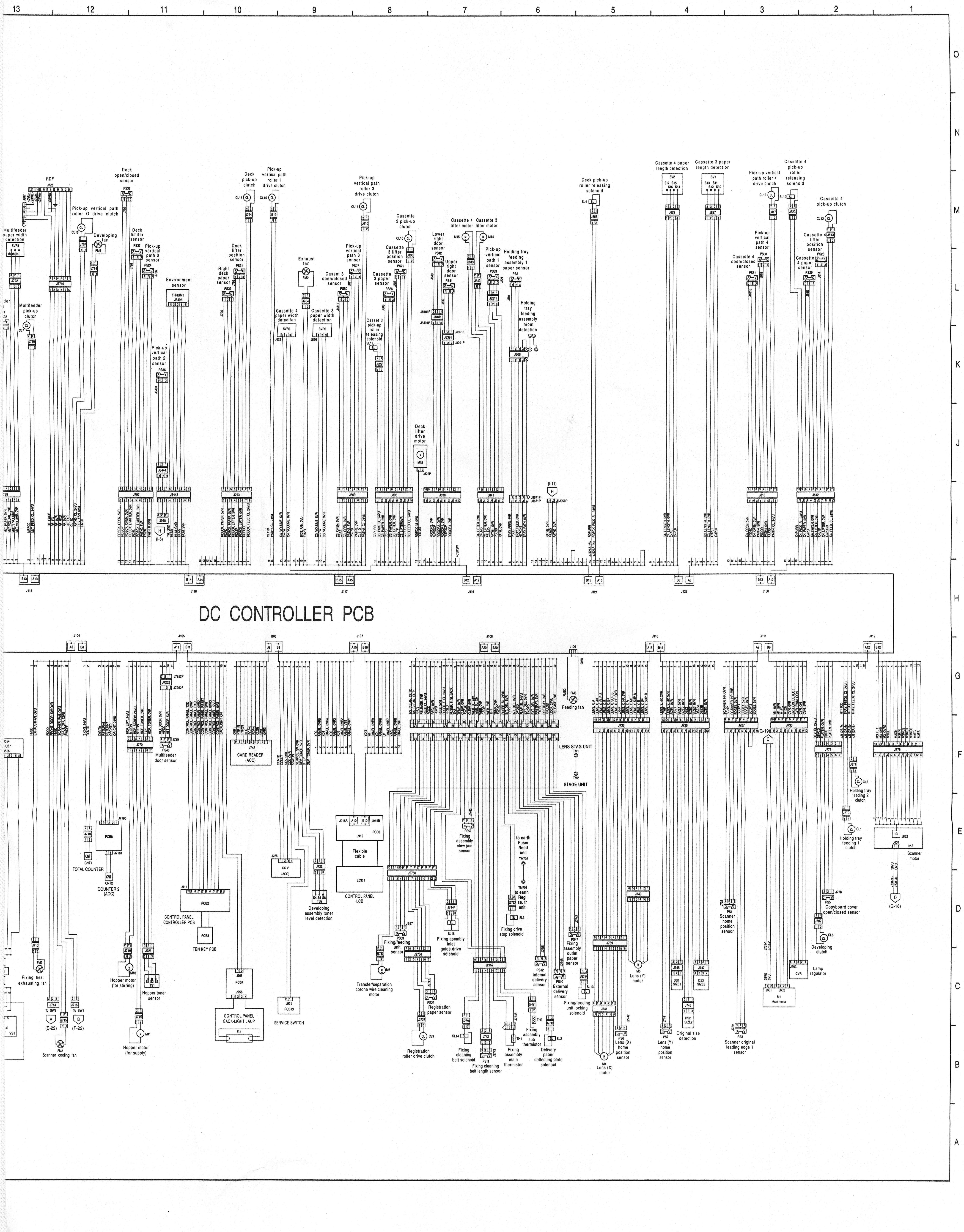
ACBTP	AC BIAS TIMING PULSE command
ACON	AC TRANSFORMER DRIVE command
LED2ON	BLANK EXPOSURE (0V) command
RDLTP	RIGHT DECK LIFTER POSITION signal
C3LMD	CASSETTE 3 LIFTER MOTOR DRIVE command
C3LTP	CASSETTE 3 LIFTER POSITION signal
C3PD	CASSETTE 3 PAPER DETECT signal
C3PL0	CASSETTE-3 PAPER LENGTH signal
C3PL1	CASSETTE-3 PAPER LENGTH signal
C3PUCD	CASSETTE 3 PICK-UP ROLLER CLUTCH DRIVE command
C3PURR	CASSETTE 3 PICK-UP ROLLER RELEASE SOLENOID DRIVE command
C3PW	CASSETTE-3 PAPER WIDTH signal
C3SS	CASSETTE 3 SET UP signal
C4LMD	CASSETTE 4 LIFTER MOTOR DRIVE command
C4LTP	CASSETTE 4 LIFTER POSITION signal
C4PD	CASSETTE 4 PAPER DETECT signal
C4PL0	CASSETTE-4 PAPER LENGTH signal
C4PL1	CASSETTE-4 PAPER LENGTH signal
C4PUCD	CASSETTE 4 PICK-UP ROLLER CLUTCH DRIVE command
C4PURR	CASSETTE 4 PICK-UP ROLLER RELEASE SOLENOID DRIVE command
C4PW	CASSETTE-4 PAPER WIDTH signal
C4SS	CASSETTE 4 SET UP signal
CBCC	COPYBOARD COVER CLOSED signal
CBOP	CLEANING BELT OUT PRECAUTION signal
CCNNT	CONTROL CARD DETECT signal
CCNTD	CONTROL CARD DRIVE command
CL11D	VERTICAL PATH ROLLER 3 CLUTCH DRIVE command
CL13D	VERTICAL PATH ROLLER 4 CLUTCH DRIVE command
CL15D*	VERTICAL PATH ROLLER 1 CLUTCH DRIVE command
CL18D*	VERTICAL PATH ROLLER 0 CLUTCH DRIVE command
DCBC	DC BIAS CONTROL signal
DCBTP	DC BIAS TIMING PULSE command
DEVCD	DEVELOPING CLUTCH DRIVE command
DHRD	DRUM HEATER DRIVE command
DPDSD	DELIVERY PAPER DEFLECTOR SOLENOID DRIVE command
DSZ1	DOCUMENT SIZE 1 signal
DSZ2	DOCUMENT SIZE 2 signal
DSZ3A	DOCUMENT SIZE 3 signal
DSZ3B	DOCUMENT SIZE 3 signal
DTEP	DEVELOPER TONER signal
EXDPD	EXTERNAL DELIVERY PAPER DETECT signal
FCBSD	FIXING CLEANING BELT DRIVE SOLENOID DRIVE command
FDOD	FRONT DOOR OPEN DETECT signal
FFUCNT	FIXING/FEEDER UNIT CONNECT signal
FFULSD	FIXING/FEEDER UNIT LOCK SOLENOID DRIVE command
FM2D	EXHAUST FAN DRIVE command (HALF SPEED)
FM3D	EXHAUST FAN DRIVE command (HALF SPEED)
FM7D	EXHAUST FAN DRIVE command (HALF SPEED)
FM2D	EXHAUST FAN DRIVE command (FULL SPEED)
FM3D	EXHAUST FAN DRIVE command (FULL SPEED)
FM5D	DEVELOPING UNIT COOLING FAN DRIVE command
FM6D	FEEDER FAN DRIVE command
FM7D	EXHAUST FAN DRIVE command (FULL SPEED)
FM8D	SCANNING LAMP COOLING FAN DRIVE command
FXCJS	FIXING ASSEMBLY CLAW JAM signal
FXDEL	FIXING UNIT DELIVERY PAPER DETECT signal
FXDSD	FIXING UNIT DRIVE SOLENOID command
FXGDSD	FIXING ASSEMBLY GUIDE DOWN SOLENOID DRIVE command
FXGUSD	FIXING ASSEMBLY GUIDE UP SOLENOID DRIVE command
HTCNT	HOLDING TRAY CONNECT signal
HTDSD	HOLDING TRAY D-CUT SOLENOID DRIVE command
HTF1CD	HOLDING TRAY FEEDER 1 CLUTCH DRIVE command
HTF2CD	HOLDING TRAY FEEDER 2 CLUTCH DRIVE command
HTFCNT	HOLDING TARY FEEDER UNIT CONNECT signal
HTFWCD	HOLDING TRAY FORWARD CLUTCH DRIVE command
HTJSD	HOLDING TRAY JOGGING SOLENOID DRIVE command
HTLPD	HOLDING TRAY LAST PAPER DETECT HOME POSITION signal
HTPDD	HOLDING TRAY PAPER DEFLECTOR SOLENOID DRIVE command
HTRGCD	HOLDING TRAY REGISTRATION ROLLER CLUTCH DRIVE command
HTRVCD	HOLDING TRAY REVERSE CLUTCH DRIVE command
HTSPCD	HOLDING TRAY SEPARATION CLUTCH DRIVE command
HTWSD	HOLDING TRAY WEIGHT SOLENOID DRIVE command
HTXHP	HOLDING TRAY X HOME POSITION signal
HTYHP	HOLDING TRAY Y HOME POSITION signal
HUM1	MACHINE INSIDE HUMIDITY signal 1
HUM2	MACHINE INSIDE HUMIDITY signal 2
HVPCT	PRE-TRANSFER CORONA CURRENT CONTROL command
HVSCT	SEPARATION CORONA CURRENT CONTROL command
HVTCT	TRANSFER CORONA CURRENT CONTROL command
HVTPC	PRIMARY CORONA CURRENT CONTROL command
IDPD	INSIDE DELIVERY PAPER DETECT signal
LAON	SCANNING LAMP DRIVE command
LCDLGHT	LCD BACK-LIGHT ON command
LED2CK	BLANK EXPOSURE command (CLOCK)
LED2DT	BLANK EXPOSURE command (DATA)
LED2LD	BLANK EXPOSURE command (DATA LATCH)
LINT	CVR PWM signal
LXHP	LENS X HOME POSITION signal
LYHP	LENS Y HOME POSITION signal
M1H/L	MAIN MOTOR SPEED CHANGE command
M2BLK	PAPER PICK UP MOTOR BRAKE command
M2H/L	PAPER PICK-UP MOTOR SPEED CHANGE command
M3BRK	SCANNER MOTOR BRAKE command
M3F/R	SCANNER MOTOR FORWARD command
M3FS	SCANNER MOTOR SPEED signal
M3MD0	SCANNER MOTOR REPRODUCTION RATIO SELECT (0) command

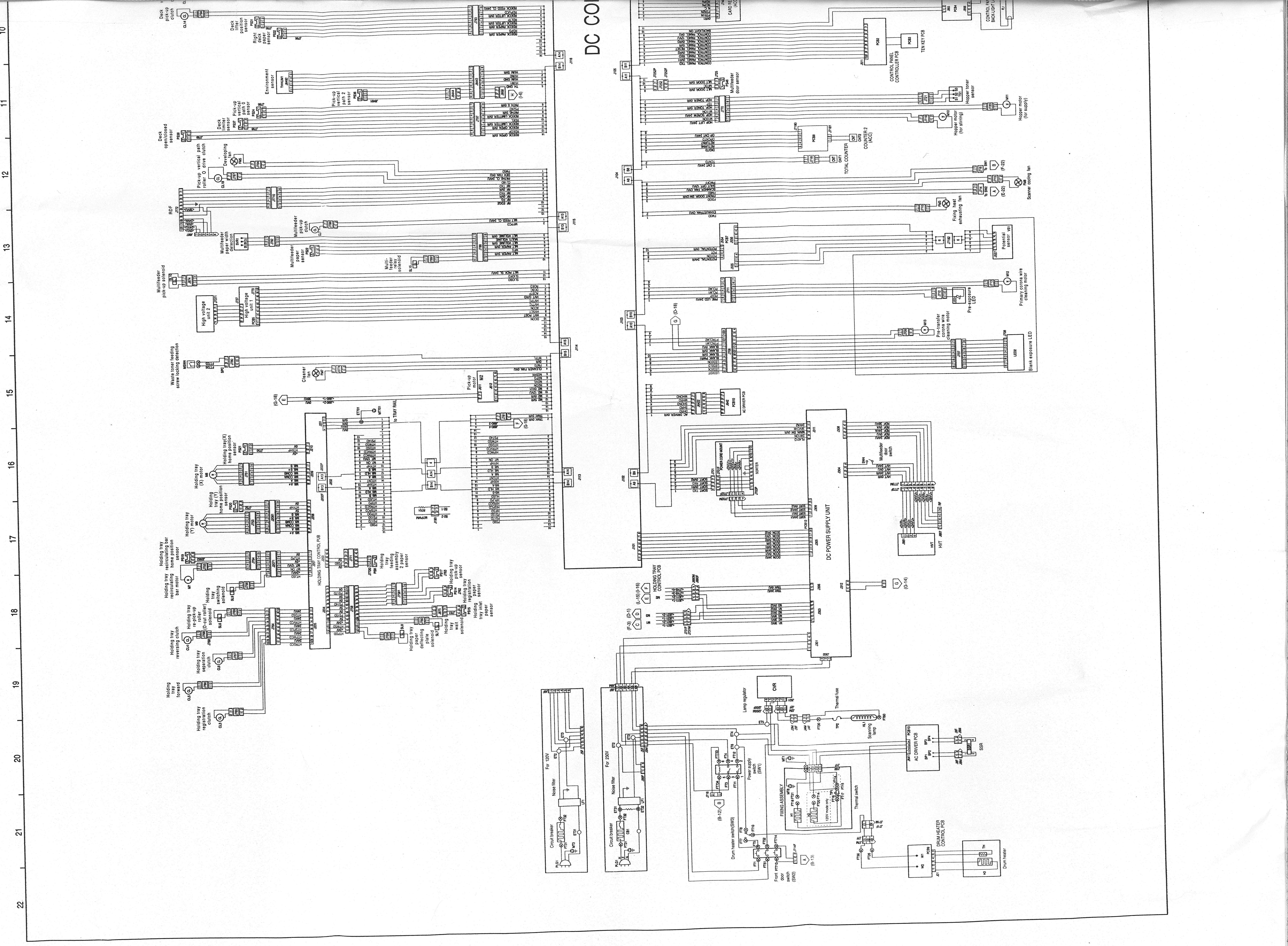
M3MD1	SCANNER MOTOR REPRODUCTION RATIO SELECT (1) command
M3MD2	SCANNER MOTOR REPRODUCTION RATIO SELECT (2) command
M3ON	SCANNER MOTOR DRIVE command
M3CL	SCANNER MOTOR PLL CONTOL command
M4A	LENS X MOTOR (A) command
X-HOLD	LENS X MOTOR (HOLD) command
M4B	LENS X MOTOR (B) signal
M5A	LENS Y MOTOR (A) signal
Y-HOLD	LENS Y MOTOR (HOLD) signal
M5B	LENS Y MOTOR (B) signal
M8A	HOLDING TRAY X MOTOR (A) command
M8B	HOLDING TRAY X MOTOR (B) command
M8HLD	HOLDING TRAY X MOTOR (HOLD) command
M9A	HOLDING TRAY Y MOTOR (A) command
M9B	HOLDING TRAY Y MOTOR (B) command
M9HLD	HOLDING TRAY Y MOTOR (HOLD) command
M1FG	MAIN MOTOR 1/4 CLOCK PULSE signal
M1ON	MAIN MOTOR DRIVE command
M10ON	HOPPER MOTOR (TONER SUPPLY) DRIVE command
M11ON	HOPPER MOTOR (TONER STIRRING) DRIVE command
M2ON	PAPER FEED MOTOR DRIVE command
M7ON	HOLDING TRAY LAST PAPER DETECT MOTOR DRIVE command
MFDC	MULTIFEEDER DOOR OPEN DETECT signal
MFPCD	MULTIFEEDER PICK-UP CLUTCH ROLLER DRIVE command
MFPW	MULTI FEEDER PAPER WIDTH signal
MFRLSD	MULTIFEEDER PICK-UP RELAY SOLENOID DRIVE command
MFS	MULTIFEEDER PAPER DETECT signal
MHOND	MULTIFEEDER PAPER DETECT signal
MHRD	MAIN HEATER DRIVE command
OPCNTD	OPTION COUNTER DRIVE command
OPRST	OPERATION PANEL CPU RESET command
PCLHP	PRIMARY CORONA WIRE CLEANER HOME POSITION signal
PCLM	PRIMARY CORONA WIRE CLEANER MOTOR DRIVE command
PEXP	PRE-EXPOSURE LED DRIVE command
POT	PHOTOSENSITIVE DRUM SURFACE POTENTIAL signal MOTOR
POT-S-ON	PHOTOSENSITIVE DRUM SURFACE POTENTIAL SENSOR POWER ON command
PS14D	HOLDING TRAY REGISTRATION PAPER DETECT signal
PS15D	HOLDING TRAY ENTRANCE PAPER DETECT signal
PS17D	HOLDING TRAY PAPER DETECT signal
PS24D	PICK-UP VERTICAL PATH-0 PAPER DETECT signal
PS27D	PICK-UP VERTICAL PATH-3 PAPER DETECT signal
PS30D	PICK-UP VERTICAL PATH-4 PAPER DETECT signal
PS33D	PICK-UP VERTICAL PATH-1 PAPER DETECT signal
PS36D	PICK-UP VERTICAL PATH-2 PAPER DETECT signal
PS8D	HOLDING TRAY FEEDER 1 PAPER DETECT signal
PS9D	HOLDING TRAY FEEDER 2 PAPER DETECT signal
PTCLHP	PRE-TRANSFER CORONA WIRE CLEANER HOME POSITION signal
PTRCLM	PRE-TRANSFER CORONA WIRE CLEANER MOTOR DRIVE command
PWOFF	POWER SWITCH OFF command
RDEL	RIGHT DECK LIFTER LIMIT signal
RDEOP	RIGHT DECK OPEN DETECT signal
RDFEDGE	RDF DOCUMENT LEADING EDGE signal
RDLMD	RIGHT DECK LIFTER MOTOR DRIVE command
RDPD	RIGHT DECK PAPER DETECT signal
RDPUCD	RIGHT DECK PICK-UP ROLLER CLUTCH DRIVE command
RDPURR	RIGHT DECK PICK-UP ROLLER RELEASE SOLENOID DRIVE command
RGCD	REGISTRATION ROLLER CLUTCH DRIVE command
RGPD	REGISTRATION PAPER DETECT signal
RL401D	PWU RELAY DRIVE command
RLWDOP	RIGHT LOWER DOOR OPEN DETECT signal
ROED	ROLLER ELECTRO BIAS DRIVE command
RUPDOP	RIGHT UPPER DOOR OPEN DETECT signal
SCDP1	SCANNER DOCUMENT LEADING EDGE 1 signal
SCHP	SCANNER HOME POSITION signal
SHOND	SUB HEATER ON DETECT signal (120V)
SHRD	SUB HEATER DRIVE command (120V)
SL10BD	MULTIFEED ROLLER SOLENOID DRIVE command
SL10FD	MULTIFEED ROLLER SOLENOID DRIVE command
SL10D	MULTI FEEDER PICK-UP SOLENOID DRIVE command
SSWON	SERVICE SWITCH signal
SW1ON	POWER SWITCH ON DETECT signal
TCNTD	TOTAL COUNTER DRIVE command
TEP	HOPPER TONER signal
TH1	FIXING HEATER THERMISTOR signal 1
TH2	FIXING HEATER THERMISTOR signal 2
TH	DRUM HEATER THERMISTOR signal
TSCLHP	TRANSFER/SEPARATION CORONA WIRE CLEANER HOME POSITION signal
TSCLM	TRANSFER/SEPARATION CORONA WIRE CLEANER DRIVE command
WTFL	WASTE TONER FEEDING SCREW LOCK DETECT signal

2. Abbreviations

AER	AE (MEASUREMENT) ROTATION
CNTR1	CONTROL ROTATION 1
CNTR2	CONTROL ROTATION 2
INTR	INITIAL ROTATION
LSTR	LAST ROTATION
SCFW	SCANNER FORWARD
SCRV	SCANNER REVERSE
STBY	STANDBY
WAIT	WAIT
WMUP	WARM UP
WMUPR	WARM UP ROTATION

C. GENERAL CIRCUIT DIAGRAM


DC CONTROLLER PCB
13
12
11
10
9
8
7
6
5
4
3
2
1
O
N
M
L
K
J
I
H
G
F
E
D
C
B
A
RDF
Multifeeder paper width detection
Multifeeder pick-up clutch
Pick-up vertical path roller 0 drive clutch
Developing fan
Deck open/closed sensor
Deck limiter sensor
Pick-up vertical path 0 sensor
Environment sensor
Pick-up vertical path 2 sensor
Right deck paper sensor
Deck lifter position sensor
Deck pick-up clutch
Pick-up vertical path roller 1 drive clutch
Cassette 4 paper width detection
Exhaust fan
Cassette 3 paper width detection
Cassett 3 open/closed sensor
Pick-up vertical path 3 sensor
Pick-up vertical path roller 3 drive clutch
Cassette 3 paper sensor
Cassette 3 lifter position sensor
Cassette 3 pick-up clutch
Casset 3 pick-up roller releasing solenoid
Lower right door sensor
Upper right door sensor
Deck lifter drive motor
Cassette 4 lifter motor
Cassette 3 lifter motor
Pick-up vertical path 1 sensor
Holding tray feeding assembly 1 paper sensor
Holding tray feeding assembly in/out detection
Deck pick-up roller releasing solenoid
Cassette 4 paper length detection
Cassette 3 paper length detection
Pick-up vertical path roller 4 drive clutch
Cassette 4 open/closed sensor
Pick-up vertical path 4 sensor
Cassette 4 pick-up roller releasing solenoid
Cassette 4 lifter position sensor
Cassette 4 paper sensor
Cassette 4 pick-up clutch
Fixing heat exhausting fan
Scanner cooling fan
TOTAL COUNTER
COUNTER 2 (ACC)
Hopper motor (for stirring)
Hopper toner sensor
Hopper motor (for supply)
Multifeeder door sensor
CONTROL PANEL CONTROLLER PCB
TEN KEY PCB
CONTROL PANEL BACK-LIGHT LAUP
CARD READER (ACC)
SERVICE SWITCH
Developing assembly toner level detection
Flexible cable
CONTROL PANEL LCD
Transfer/separation corona wire cleaning motor
Fixing/feeding unit sensor
Registration paper sensor
Registration roller drive clutch
Fixing assembly claw jam sensor
Fixing assembly inlet guide drive solenoid
Fixing cleaning belt solenoid
Fixing cleaning belt length sensor
Fixing assembly main thermistor
Fixing assembly sub thermistor
to earth Fuser /feed unit
to earth Regi se. tr unit
Fixing drive stop solenoid
Delivery paper deflecting plate solenoid
Internal delivery sensor
External delivery sensor
Fixing assembly outlet paper sensor
Fixing/feeding unit locking solenoid
LENS STAG UNIT
STAGE UNIT
Feeding fan
Lens (X) motor
Lens (X) home position sensor
Lens (Y) motor
Lens (Y) home position sensor
Original size detection
Scanner home position sensor
Scanner original leading edge 1 sensor
Main motor
Lamp regulator
Developing clutch
Copyboard cover open/closed sensor
Holding tray feeding 1 clutch
Holding tray feeding 2 clutch
Scanner motor
(G-18)
(G-19)
(E-22)
(F-22)
(I-6)
(I-11)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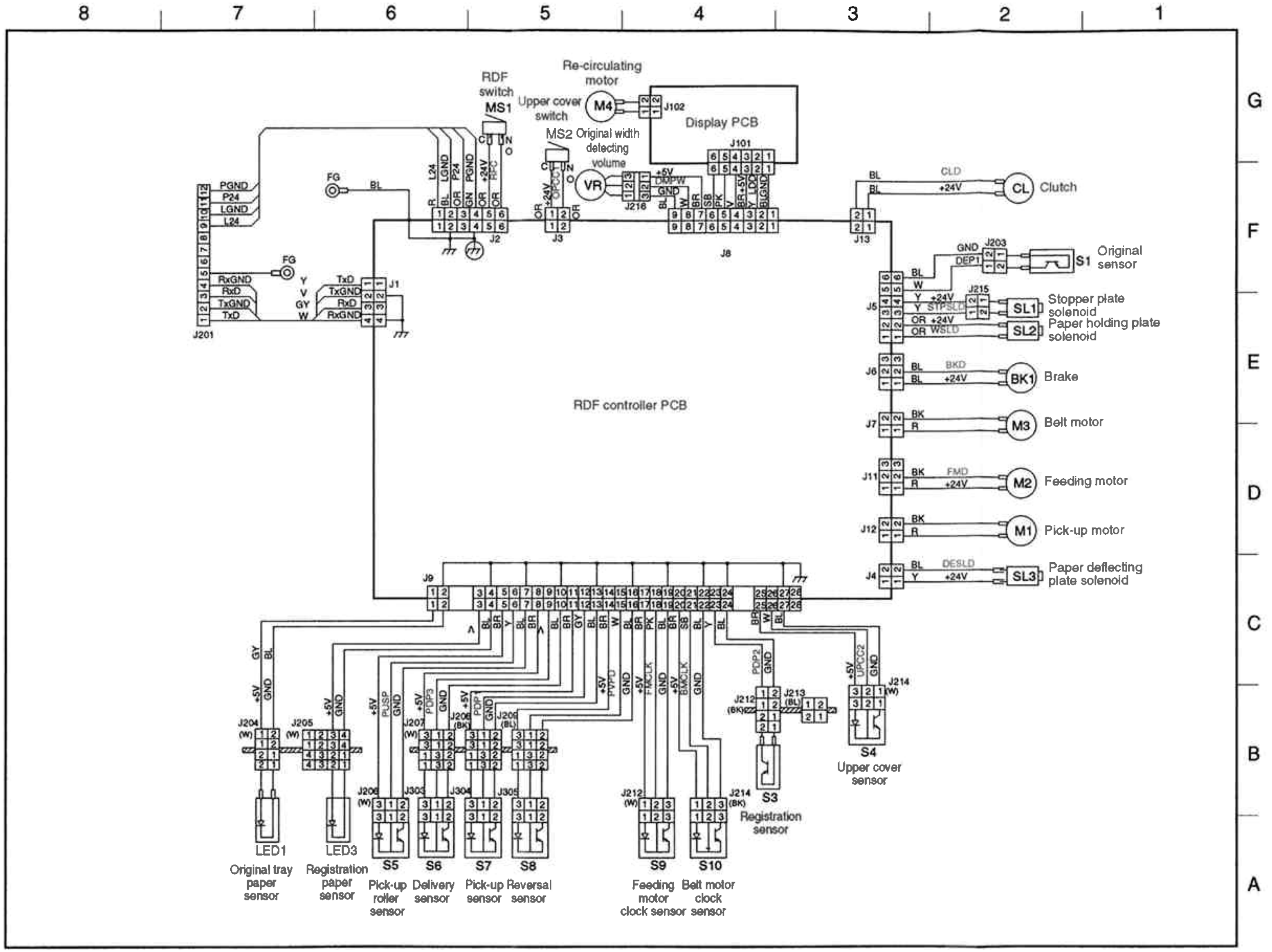
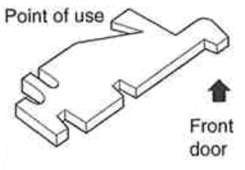
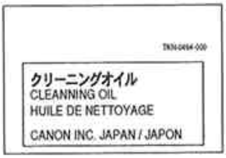
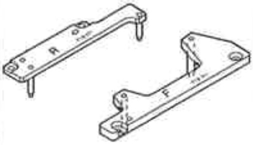
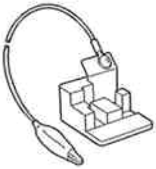
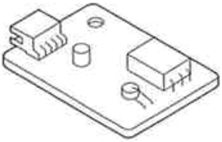
DC CO
DC POWER SUPPLY UNIT
HOLDING TRAY CONTROL PCB
Deck pick-up clutch
Deck lifter position sensor
Right deck paper sensor
Environment sensor
Pick-up vertical path 2 sensor
Pick-up vertical path 0 sensor
Deck limiter sensor
Deck open/closed sensor
Developing fan
Pick-up vertical path roller 0 drive clutch
RDF
Multifeeder pick-up clutch
Multifeeder paper width detection
Multifeeder paper sensor
Multi-feeder relay solenoid
Multifeeder pick-up solenoid
High voltage unit 2
High voltage unit 1
Waste toner feeding screw locking detection
Cleaner fan
Pick-up motor
Holding tray (X) home position sensor
Holding tray (X) motor
Holding tray (Y) home position sensor
Holding tray (Y) motor
Holding tray recirculating bar home position sensor
Holding tray recirculating bar motor
Holding tray switching solenoid
Holding tray re-pick-up roller (D-cut roller) solenoid
Holding tray reversing clutch
Holding tray separation clutch
Holding tray forward
Holding tray registration clutch
Holding tray feeding assembly 2 paper sensor
Holding tray pick-up sensor
Holding tray registration paper sensor
Holding tray inlet paper sensor
Holding tray wait solenoid
Holding tray paper deflecting plate solenoid
to TRAY RAIL
CONTROL PANEL CONTROLLER PCB
TEN KEY PCB
CARD RE
CONTROL PAN BACK LIGHT
Multifeeder door sensor
Hopper toner sensor
Hopper motor (for supply)
Hopper motor (for stirring)
TOTAL COUNTER
COUNTER 2 (ACC)
Scanner cooling fan
Fixing heat exhausting fan
Potential sensor
Primary corona wire cleaning motor
Pre-exposure LED
Pre-transfer corona wire cleaning motor
Blank exposure LED
AC DRIVER PCB
SORTER
Multifeeder door switch
HVT
For 120V
For 230V
Noise filter
Circuit breaker
CVR
Lamp regulator
Thermal fuse
Scanning lamp
SSR
Power supply switch (SW1)
FIXING ASSEMBLY
Thermal switch
Drum heater switch (SW3)
Front door switch (SW2)
DRUM HEATER CONTROL PCB
Drum heater
IMPRIME AU JAPON

D. RDF-H1 GENERAL CIRCUIT DIAGRAM


8
7
6
5
4
3
2
1
G
F
E
D
C
B
A
RDF switch
MS1
Upper cover switch
Re-circulating motor
M4
J102
Display PCB
J101
MS2 Original width detecting volume
VR
J216
J2
J3
J8
J201
PGND
P24
LGND
L24
RxGND
RxD
TxGND
TxD
FG
J1
RDF controller PCB
J13
CL
Clutch
J203
S1
Original sensor
J5
J215
SL1
Stopper plate solenoid
SL2
Paper holding plate solenoid
J6
BK1
Brake
J7
M3
Belt motor
J11
M2
Feeding motor
J12
M1
Pick-up motor
J4
SL3
Paper deflecting plate solenoid
J9
J204
J205
J207
J206
J209
J212
J213
J214
S4
Upper cover sensor
S3
Registration sensor
J208
J303
J304
J305
LED1
Original tray paper sensor
LED3
Registration paper sensor
S5
Pick-up roller sensor
S6
Delivery sensor
S7
Pick-up sensor
S8
Reversal sensor
S9
Feeding motor clock sensor
S10
Belt motor clock sensor

E. SPECIAL TOOLS LIST

No.	Tool description	Tool No.	Shape	Notation	Remarks
1	Door switch	TKN-0093	 Point of use Front door	A	
2	Cleaning oil	TKN-0464	 クリーニングオイル CLEANNING OIL HUILE DE NETTOYAGE CANON INC. JAPAN / JAPON	A	For cleaning the fixing roller (10 packs/box)
3	Mirror positioning tool	FY9-3011		B	For adjusting the No. 1/No. 2 mirror position (front/right as a pair)
4	Potential sensor checking electrode	FY9-3012		B	For checking the potential sensor
5	Environment sensor checking tool	FY9-3014		B	For checking the environment sensor

F. SOLVENTS AND OILS

No.	Description	Use	Composition	Description
1	Ethyl alcohol (Etanol) Isopropyl alcohol (Isopropanol)	Cleaning: e.g., glass, plastic, rubber parts; external covers	C2H5O (CHZ3)2 CHOH	• Do not bring near open fire. • Procure localy. • Isopropyl alcohol may be substituted.
2	MEK	Cleaning: e.g., metal; oil or toner	CH3COC2H5	• Do not bring near fire. • Procure locally.
3	Heat-resisting grease	Lubricating; e.g., fixing drive assemblies	Lithium soap (mineral oil family) Moblybdenum bisulfide	• CK-0427 (500 g/can)
4	Lubricant oil	Lubricating: scanner rail; spring clutch	Mineral oil (paraffin family)	• CK-0451 (100 cc)
5	Lubricant oil	Lubricating: pick-up assembly roller bushing (FS2-1005-000)	Mineral oil (paraffin family)	• CK-0524 (100 cc)
6	Lubricant oil	Lubricating: drive and friction parts	Slicone oil	• CK-0551 (20 g)

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